AMERICAN PHARMACEUTICAL ASSOCIATION.
COMMITTEE ON THE REVISION OF THE UNITED STATES PHARMACOPŒIA

O. E. Johnson.

REPORT

ON THE

Revision of the U.S. Pharmacopoei

PRELIMINARY TO THE CONVENTION OF 1880.

BEING A ROUGH DRAFT OF THE

General Principles, Titles, and Working Formulae proposed for the next Pharmacopoeia.

PREPARED AND COMPILED BY

CHARLES RICE,

CHAIRMAN OF THE COMMITTEE.

NEW YORK
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PREFACE.

For several years past, the Revision of the United States Pharmacopœia has engaged the attention of the medical and pharmaceutical professions in this country; and the various questions relating to the general methods to be followed in its reconstruction, or to the proper authority to take charge of its publication have been discussed at length. The credit of having most thoroughly awakened interest in pharmacopœial matters undoubtedly belongs to Dr. E. R. Squibb, who advocated an entirely new departure, namely, the placing the revision under the charge and authority of the American Medical Association,* which is the representative body of the medical profession in the United States. This body having, however, subsequently refused to accept the charge, and it appearing that much valuable time would be lost in arguing the more abstract or theoretical side of the question, the American Pharmaceutical Association, at its meeting held at Toronto (Sept., 1877), determined to pave the way for the solution of the problem, if possible, practically, and adopted the following preamble and resolution offered by Dr. Frederick Hoffmann:

Whereas, The plan and method adopted for the elaboration of the first edition of the United States Pharmacopœia, and subsequently continued for its decennial revision, in consequence of the improved means of intercourse, and, moreover, by the altered conditions, resources, and requirements of the arts, sciences, and the practice of medicine and pharmacy, require a reform; and

Whereas, The Pharmacopœial Convention, as yet the only authorized body for revising and publishing the Pharmacopœia, is so constituted that it meets for this purpose only once in ten years, and has not acted in time,

* The principal essays, *pro* and *contra*, bearing on this subject will be found in a pamphlet entitled "The American Medical Association and the United States Pharmacopœia. A Reprint of the Pamphlets of Dr. H. C. Wood, Mr. Alf. B. Taylor, The Philadelphia County Medical Society, and the National College of Pharmacy, with a Rejoinder addressed to the Professions of Medicine and Pharmacy of the United States. By EDWARD R. SQUIBB, M.D., of Brooklyn." Brooklyn, 1877, 8vo, pp. 157.

It was a matter of great regret that the services of Dr. Squibb could not be secured in an *official* capacity for the Committee. His reluctance to serve, we are authorized to say, was not due to diminished interest in the Pharmacopœia, nor to unwillingness to work for it in the way to be tried by this Committee; on the contrary, it was owing to his conviction that it would not be consistent for him to take a prominent part in a movement led by the American Pharmaceutical Association, after it had been received with such marked disfavor when proposed to the American Medical Association.

notwithstanding the recognized necessity of an earlier revision, to make the Pharmacopœia conform with the progress and present status of Materia Medica and the practice of pharmacy; and

Whereas, The American Medical Association, after a full presentation of this subject and of a matured plan for action, at its recent meeting at Chicago, has failed to take any action in reference to the revision of the Pharmacopœia, by indefinitely postponing the proposed project; therefore,

Resolved, That the President of this Association appoint a committee of five to take into consideration the advisability and feasibility, on the part of the American Pharmaceutical Association, as the national representative organization of the profession of pharmacy, to prepare a complete Pharmacopœia, which may be submitted to the criticisms of the medical and pharmaceutical professions, and may be proposed to the final Committee of Revision, and that that committee be instructed to report early at the next session, so as to leave time for definite action at this meeting.

A Committee on Revision was subsequently appointed, the members of which were selected with a view of having the different sections of the United States properly represented. Shortly after the meeting, the undersigned drew up a preliminary plan for reconstructing the Pharmacopœia, which was sent out, as a circular, for the purpose of eliciting criticism and suggestions. On December 28th, 1877, a meeting of the Committee was held in New York, at which the published plan was fully discussed, and after various amendments, finally adopted, so that there is reason to believe that the profession will, at least in all important points, approve the General Principles according to which the revision was to be undertaken. The undersigned, then, after consultation with the members, allotted the various portions of the work to those who either expressed a preference for some particular section, or who otherwise seemed, from their known specialties, most competent to take charge of a special department. During the first year, considerable progress was made, as may be seen by referring to the report of the undersigned, presented at the meeting of the Association at Atlanta (Sept., 1878), at which time he felt compelled to resign his office as Chairman of the Committee. Several months afterwards, however, when it was ascertained that the newly elected chairman was constrained, by reason of impaired eye-sight, to decline the office, the undersigned, though very reluctantly, reaccepted the position, in order that the undertaking might at least not fail for want of a proper organization.

Previous to this period, it had already become apparent that the original plan of the Committee, namely, to construct a complete Pharmacopœia, could not be carried out for various reasons. One of these is, that no single member of the Committee could afford to devote sufficient time to the work. Another reason is, that many determinations of values, such as specific gravity, weight of end-product, or of solid residues, and analytical data should only be made *after* the proposed processes have been finally adopted, and, if

possible, should only be made by one and the same expert. To do this at present, before the formulæ have been properly scrutinized, amended, and finally adopted, would only be a waste of time. In the course of the past year, the undersigned received a sufficient number of contributions to warrant him in beginning their compilation for the Association. To do this properly, it was necessary to rewrite a large portion of the contributions received, in order to bring uniformity into the work, since each contributor naturally had employed different methods of treatment, as well as different expressions and language. As a specimen of the work, a Report, containing a considerable number of working formulæ, was presented at the last meeting of the Association at Indianapolis (Sept., 1870), accompanied by a general report on the progress and prospects of the work. More material was in the hands of the undersigned, which was, however, at that time, not in a condition to be presented, being only in the form of skeleton notes and figures. The undersigned, in his Report, expressly stated that the work was not of a nature to entitle it to be printed in the *Proceedings*, as it was rather of an ephemeral than of a permanent character; and he had no hope or expectation that another feasible plan for having it published, would be discovered. After the presentation of the Report, however, it seemed to be the wish of the majority of members present that the work should be printed, and the following Resolution to this effect was introduced by Dr. George Ross:

> *Resolved*, That the Report of the Committee on the Revision of the U. S. Pharmacopœia be printed in pamphlet form, provided the expense of printing be borne by the Colleges and Societies represented in the Association.

While there appeared to be some difference of opinion as to the wisdom or propriety of publishing such a work in advance of the Decennial Convention, the Resolution was nevertheless adopted, and a special Committee on Publication appointed. This Committee, soon after the meeting, issued a circular addressed to pharmaceutical colleges and associations throughout the country, and also to single members or prominent firms specially interested in pharmaceutical matters, requesting their aid toward accomplishing the object in view.

This appeal was so successful that the necessary funds, estimated as being required for the work, were in the hands of the Chairman (Dr. Ross) within four weeks after issuing the circular. In the mean time, the undersigned devoted every spare moment to the completion of the manuscript—a task which was frequently very onerous, for the reason that comparisons between several proposed formulæ, or actual experiments had often to be made at the last moment, in order to present such formulæ in a complete manner.

The present Report has been compiled by the undersigned, partly from the contributions or memoranda received from members of the Committee, and other gentlemen who have given their aid, and partly from his own notes, either based on personal experience, or on the recorded statements of others.

If he had been able to devote his time exclusively to this work, it would, no doubt, be more satisfactory to him. But, being compelled to carry on the work at such moments only as could be spared from business, with frequent interruptions, and besides, wishing to preserve as much as possible the spirit and intent of contributors, he will not be surprised if many incongruities and defects, or even errors in calculations and processes, should be discovered, ascribable to these causes. To go over the whole manuscript a second time, with the necessary care, was impossible, and it was only during the reading of the proofs that obvious errors or misstatements could be corrected. In this latter task he has been very materially assisted by DR. E. R. SQUIBB, DR. FRED. HOFFMANN, MR. PAUL BALLUFF, PROF. P. W. BEDFORD, and MR. B. F. MCINTYRE, of New York, all of whom scrutinized the proofs with a view to eliminating palpable errors. Of course, their individual criticisms on matters admitting of argument are reserved until the completion of the work.

It should be distinctly understood that the present Report does not represent the united or unanimous views of the members of the Committee; and that the word *Committee*, wherever it occurs in the Report proper, is to be taken in a restricted sense, meaning one, two, or more members, who, *on behalf of the Committee*, provisionally worked up a certain subject. In consequence of this, the Report should be viewed as a "printed manuscript," to be circulated among the members of the Committee for scrutiny and correction; and at the same time to be submitted to the medical and pharmaceutical professions to invite further contributions of knowledge, and criticism which may aid in attaining the object more completely.

The undersigned at first intended to indicate at the foot of each formula the name or names of the members on whose authority the formulæ were given or altered. But it was soon found that to do this properly, by crediting each member with his particular share, would take up much valuable room, and therefore the names were mostly omitted. In a number of instances, however, the names of the authorities were mentioned for obvious reasons.

As soon as it was ascertained that sufficient funds for publication would be at the disposal of the Committee, it was necessary to decide how much should be printed and in what manner. Among the papers received during 1878 (April), there was a valuable contribution by Mr. Charles Mohr, in which the native vegetable crude drugs were described according to the plan adopted by the Committee, and about August, 1879, Dr. Fred. Hoffmann handed in the first part of his Report on Chemicals, in which the latter were likewise treated according to the general principles agreed upon. Both of these papers were available for publication with the present Report, but on mature consideration it was thought best to omit them, for several reasons. In the first place, both reports, though very carefully prepared and valuable in themselves, covered only a portion of their respective fields, and there was not time to make up the deficiency.* Another reason was, that their insertion

* Mr. Mohr's report will partly appear in the forthcoming vol. 27 of the Proceedings.

would increase the proposed publication beyond the estimated number of pages, and consequently beyond the available funds in the hands of the Committee. But the principal reason was, that it appeared to the Publication Committee of greater advantage, *for the present*, to publish the pharmaceutical part of the work, containing the reconstructed working formulæ, as it is more important to assure the correctness of these than the more theoretical, correct description of vegetable drugs and of chemicals. It is, of course, quite important that the Pharmacopœia should give a complete and correct definition and description of *Gelsemium* or of *Sodii Bromidum*, for instance; but so far as this preliminary Report is concerned, it is of greater importance to have a correct working formula for, say, *Liquor Ferri Chloridi*. Accordingly, the undersigned concluded to confine full-length descriptions to the pharmaceutical part (including only a few chemicals), while the other articles at present officinal or proposed to be introduced into the new pharmacopœia were only inserted by title in their proper alphabetical order, so as to present at least a complete frame-work around which the remainder of the text may hereafter be constructed. While engaged on this work, the undersigned received from his friend, Prof. F. A. Flückiger, of Strassburg, a copy of the Report on the Revision of the German Pharmacopœia, prepared by a committee of the German Pharmaceutical Association, which was found to contain so many excellent and useful hints and remarks, that he thought it would be of service to the profession to incorporate the more important portions adapted to our own pharmacopœia into the present Report.

Since the names of the contributors have in most cases been left out in the text, for the reasons stated above, the undersigned takes pleasure to acknowledge, in this place, the valuable contributions received from the following gentlemen:

Dr. E. R. Squibb, of Brooklyn, N. Y.: Studies on Fluid Extracts, and on Repercolation (see *Proceed. Am. Ph. Asso.*, 26, 708; also separately in pamphlet form).

Prof. Alb. B. Prescott, M.D., of Ann Arbor, Mich.: Papers on the Assay of Opium and its Preparations; and on the Assay of Cinchona and Tests of the Cinchona Alkaloids.

Prof. W. T. Wenzell, of San Francisco, assisted by *Mr. M. Tschirner*, and partly by *Mr. J. S. Calvert:* Table of Solubilities of the officinal Chemicals in Water.*

California College of Pharmacy, through *Mr. J. G. Steele:* Commentary on old and new preparations, with recommendations for the next U. S. Ph.

Prof. C. Lewis Diehl: Study of Fluid Extracts (see *Proceedings*, vols. 25 and 26).

Mr. Charles Mohr: Description and Definition of Native Crude Vegetable Drugs, worked out in accordance with the proposed plan.

Dr. Frederick Hoffmann: Description of a portion of the Chemicals, accompanied with tests of identity and purity.

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* This table is not quite completed, and will be published hereafter.

Prof. Emlen Painter: Transcalculation into parts by weight of a large number of formulæ.

Prof. P. W. Bedford: A similar contribution.

Mr. S. A. D. Sheppard: A voluminous collection of notes, comments, and criticisms on pharmacopœial processes and preparations, compiled from the pharmaceutical literature since the appearance of the last U. S. Pharm. Also, in conjunction with other gentlemen of Boston, Reconstruction of the Working Formulæ for Syrups.

Mr. Louis Dohme: Transcalculation into parts by weight of the Iron Preparations and of the Spirits.

Prof. Joseph P. Remington: Study and Reconstruction of the Tinctures.

Mr. J. U. Lloyd: Improved working formulæ for various pharmaceutical preparations.

Mr. W. H. Crawford: General comments on various articles in the Pharmacopœia, and formulæ for officinal Wines.

Minor contributions have been received from Messrs. B. F. McIntyre, Geo. W. Kennedy, Wm. Saunders, Edw. Baker, G. Zellhoefer, and others, for all of which the undersigned desires to express his thanks.

The present Report will no doubt be used by some as a basis on which to build up something better and more perfect for presentation to the National Convention, or to the Final Committee on Revision. If it shall be found to be of sufficient value to serve as such basis, and to be used as a starting-point for further improvement—with the errors contained therein eliminated—the labor of the Committee and of the undersigned will not have been entirely in vain.

NEW YORK, Feb. 10th, 1880. CHARLES RICE.

Report of the Committee on Publication of the Report on the Revision of the U. S. Pharmacopoeia.

The undersigned Chairman of the Committee on Publication of the Report on the Revision of the United States Pharmacopœia, appointed at the late meeting of the American Pharmaceutical Association, held at Indianapolis, in September, 1879, is pleased to announce the completion of the work assigned to the Committee.

A circular was issued on the first of October, asking for contributions for publishing the Report, which was sent to Colleges of Pharmacy, State, County, and other Pharmaceutical Associations, to individual members of the Association, as well as to other persons interested in the pharmacopœial revision, not members of the Association; and so promptly was the call responded to from all parts of the Union, that before the end of the month, a sufficient sum of money was in the hands of the Chairman to insure its publication.

The Committee return their hearty thanks for the timely cash responses; for the very many friendly words of encouragement; and for the efficient personal aid rendered by many friends in securing the funds.

For the Committee, GEORGE ROSS, Lebanon, Pa.

Committee on the Revision of the U. S. Pharmacopoeia

APPOINTED BY THE

AMERICAN PHARMACEUTICAL ASSOCIATION

At its Twenty-Fifth Annual Meeting, held at Toronto, Sept., 1877.

CHARLES RICE, Chairman	New York, N. Y.
FREDERICK HOFFMANN	New York, N. Y.
P. WENDOVER BEDFORD	New York, N. Y.
JOHN M. MAISCH	Philadelphia, Pa.
JOSEPH P. REMINGTON	Philadelphia, Pa.
CHARLES BULLOCK	Philadelphia, Pa.
GEORGE F. H. MARKOE	Boston, Mass.
SAMUEL A. D. SHEPPARD	Boston, Mass.
LOUIS DOHME	Baltimore, Md.
EZEKIEL H. SARGENT	Chicago, Ill.
C. LEWIS DIEHL	Louisville, Ky.
JOHN U. LLOYD	Cincinnati, O.
WILLIAM H. CRAWFORD	St. Louis, Mo.
CHARLES MOHR	Mobile, Ala.
EMLEN PAINTER	San Francisco, Cal.
WILLIAM SAUNDERS	London, Ontario, Canada.

Committee on Publication of the Present Report

APPOINTED AT THE

Twenty-seventh Annual Meeting, held at Indianapolis, Sept., 1879.

GEORGE ROSS, Chairman	Lebanon, Pa.
CHARLES RICE	New York, N. Y.
C. LEWIS DIEHL	Louisville, Ky.

GENERAL PRINCIPLES

RECOMMENDED FOR ADOPTION IN THE

REVISION OF THE U. S. PHARMACOPŒIA.*

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1. *Language.*—The text of the U. S. Pharmacopœia is to be written in the English language; but the titles of the officinal substances and preparations are to be given, as heretofore, both in Latin and in English.

¶ However strong the arguments may be in favor of using the Latin language in the construction of the official text of a pharmacopœia among certain European nations, where those who propose to enter the pharmaceutical profession are by law required to possess a certain amount of classical knowledge; on *this* side of the Atlantic such a proceeding would be, to say the least, impracticable, as the original Latin text would be but seldom consulted, and most pharmacists would prefer to use the translation, which naturally would be published; just as most European pharmacists prefer to use pharmacopœias either originally written in, or translated into the vernacular.

2. *Alphabetical Arrangement.*—The present division into "Materia Medica" (comprising a Primary and Secondary List) and "Preparations" is to be abolished, and all articles are to be arranged in a continuous alphabetical order, retaining, however, such headings as Extracta, Extracta Fluida, Decocta, Infusa, etc., wherever it may be found useful to give general directions referring to the whole class.

At the same time all formulæ for the preparation of the single members of each class shall be made complete in themselves.

¶ See, for instance, in the present Report the general formulæ for *Decocta* and *Infusa*.

3. *Synonyms.*—The different headings shall be accompanied, in a manner not interfering with the perspicuity of the text of the formulæ, by a list of synonyms in common use.

¶ At the same time the appellations given to each preparation in the more important foreign Pharmacopœias—British, German, and French—(pointing out important differences of strength, see below, No. 17, *n*) might be added. All this may be in

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* These Principles have been submitted to the criticism of all the members of the Committee, and have been, in general, approved and indorsed by all. In a few minor points the views of some of the members differ: where this is the case, it has been stated in the notes.

small type, immediately following the heading, and would certainly be a most useful addition.

4. *Cross-References.*—At the end of each article a short paragraph is to be added, giving the names of all the preparations into which the substance or preparation, treated of in the article, enters.

¶ In the present, as well as in previous Pharmacopœias, no facility was offered to ascertain what officinal preparations of any given drug might be available for the physician. In order to find the various preparations of Arsenic or Iron, for instance, the index had to be searched, and some would be found under *A*, some under *F*, others under *Liquores*, others under *Syrupi*, etc. If all the preparations derived from any one substance were quoted at the end of each article, this would be a great improvement.—One member of the Committee thinks this table of doubtful propriety in a Pharmacopœia.

5. *Descriptions of Crude Drugs.*—To all crude drugs, of animal or vegetable origin, concise but complete descriptions are to be added, sufficient to indicate the distinctive characteristics visible to the naked eye, and, when necessary, such as are visible under an ordinary good pocket lens, magnifying about 10 diameters. Where external and visible properties are insufficient to properly characterize the substance (as in the case of gums, resins, balsams, etc.), it shall be further defined by its physical and chemical properties.

The botanical names of plants shall be accompanied by the name of the author.

¶ A low-power lens will be sufficient in most cases. Exceptionally a higher power will be required, as for instance, in the case of Starches, Lycopodium, Kamala, etc. The description of crude drugs has been omitted in the following Report, for reasons stated in the preface.

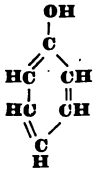
6. *Descriptions of Chemicals.*—All mineral substances, or chemical preparations, except those where differences in process produce different results, are to be described and defined by concise and complete tests of identity and purity, without giving processes. Processes for the preparation of Morphia, Quinia, and the other Cinchona alkaloids are to be omitted, but the articles "Opium" and "Cinchona" shall be accompanied with detailed processes of assay for the alkaloids.

¶ The descriptions and the tests of chemicals has been omitted in the following Report, for reasons stated in the preface.

7. *Chemical Formulæ.*—All chemicals of a definite composition should have their formulæ added, both according to the old and to the new notation, together with their atomic or molecular weights. The formulæ according to the new nomenclature should be distinguished by prominent type.

¶ The *Germ. Pharm. Rep.* declares the additions of formulæ of little use, because it is by no means certain that these formulæ will not soon undergo a new reconstruction, and nothing uncertain should enter into a legal work—as which the German Pharm. is to be considered; and further, because if formulæ *are* introduced, they

should be so constructed as to give an image of their rational constitution, particularly in the case of organic substances, which would be impracticable.



For our part we think that the formulæ should be introduced wherever possible. It is not at all necessary to split up the formula into all its rational integers. On the other hand, merely empirical formulæ will be useless. For instance, under Acetic Acid we do not want the empirical formulæ $C_4H_4O_4$ (old), or $C_2H_4O_2$ (new), but the primary rational formulæ: $HO,C_4H_3O_3$ (old), or $HC_2H_3O_2$ (new). On the other hand, under Carbolic Acid, we do not want the ultimate rational formula (placed in the margin), but the primary rational formula, $C_6H_5.OH$.

The introduction of these formulæ into the pharmacopœia can do no harm; on the contrary, it will be found a useful help for those who wish to calculate chemical reactions, involved in the preparation of officinal or other chemicals. Besides, in many cases the characterization of a substance would be incomplete without the formula, particularly in such cases where a certain amount of water of crystallization is required to be present. Compare below, under No. 17, *l*.

Regarding the proposed omission of processes in the case of standard chemicals, this is recommended solely for this reason, that different processes are followed by different makers, according to their individual choice or facilities for producing the same results. Should the want of such processes be considered a disadvantage, a special paragraph may be added to each article, as in some foreign pharmacopœias (f. i., *Pharmacopœa Norwegica*), giving an outline of the method of preparation most usually followed.

8. *Processes for Chemicals.*—In the case of those chemical preparations, where different processes yield different results, the process to be followed in each case shall be described in detail.

¶ This rule has been carried out in the following Report.

9. *Expressions of Quantity.*—All measures of capacity shall be abandoned, and quantities shall be expressed only in *parts by weight*. In reconstructing the formulæ of the preparations which are at present officinal, the following points are to be kept in view :

a. All such tinctures, wines, etc., in which a slight variation of dose is of no importance, are to be made as nearly as possible of a uniform percentage strength ; that is, 1 part of the drug is to be made into 5 parts of tincture, etc., or into 10 parts of tincture, as the case may be.

¶ In most of these cases the strength of the new preparations will vary more or less from that of the present Pharmacopœia; but this variation is, under the circumstances, unavoidable and of no consequence.

b. In the case of highly active preparations, as *Tinctura Aconiti Radicis*, *Tinct. Nucis Vomicæ*, *Tinct. Opii*, *Tinct. Veratri Viridis*, the present strength is to be as nearly as possible retained.

¶ Nevertheless, the proportions should be made as simple as possible, if it can be accomplished without doing great violence to the preparations. For instance, it is proposed to make all liquid Opium preparations, excepting Paregoric, of such a strength that 100 parts will represent 10 parts of Opium. There is a growing tendency towards a uniformity in the strength of these preparations; and the foremost authorities recommend that the less active tinctures be made of the strength of 20 per cent,

and the more active ones of the strength of 10 per cent. It will be worth while to ascertain whether this plan could not be adopted here, particularly now, as we are about to recast our formulæ.

10. *Numerical Relation of Quantities.*—The quantities, or parts by weight, of the ingredients entering into a composition are to be expressed in the simplest possible terms; and, whenever possible, in a decimal ratio.

¶ In many of the formulæ contained in the following Report this rule has been observed. In others it has been disregarded for the present. The Centesimal, or percentage ratio appears to be in most favor.

11. *Fluid Extracts.*—The selection of the best practical process for this class of preparations is to be left to the final Committee of Revision.

¶ Further details on this subject will be found in the following Report under the heading *Extracta Fluida.*

12. *Temperature* shall be expressed both in degrees of Centigrade and in degrees of Fahrenheit, thus: 00° C. (=00° F.).

¶ One member recommends a Table of Thermometric Equivalents to be included among the tables.

13. *Definitions of Physical Properties.*—Varieties and degrees of color, consistence, transparency, fineness of powders, etc., shall be as closely defined as possible.

¶ For instance, in describing the color of a liquid, a definite diameter of the layer or column of the liquid to be examined, should be adopted.

14. *Specific Gravity.*—A uniform method for taking the specific gravity of liquids shall be prescribed.

¶ Experience has shown that different methods of taking the specific gravity of liquids, in different hands, are liable to lead to different results. In order to eliminate, as much as possible, the errors due to accidental circumstances, a particular method, as well as the particular apparatus, should be clearly defined, so that there would be nothing left but the "personal" error of the observer.

15. *Definite Expressions of Weight.*—Whenever it is necessary to employ definite expressions of weight, as for instance, when it is directed that a pill-mass is to be divided into pills containing a certain weight of one or more constituents, this weight is to be expressed both in decimal and in apothecaries' weight.

¶ Compare the list of Pills, Suppositories, and Troches in the following Report.

16. *Weight of Finished Product.*—In those formulæ (for Syrups, Infusions, Elixirs, etc.), in which fixed quantities of ingredients are directed to be combined under circumstances which may involve a partial loss of any of the ingredients, as, for instance, where a variable amount of water may be lost

by evaporation, the weight of the intended finished product should be specified.

17. *Tables to be appended to the Pharmacopœia.*

a. List of new Additions.

¶ In the following Report the proposed additions are indicated by an asterisk (*). This is also used occasionally to point out an addition to a title already existing, f. i., *Extractum Jalapæ* **Alcoholicum.*

b. List of Articles dropped from the last Pharmacopœia.

¶ Those articles which, in the opinion of the Committee, should be dropped, are indicated in the following Report by an italic *d.* Many others are likewise so seldom used in medical practice that the number to be dropped might be considerably increased. But it is necessary to be careful in this matter, because a drug which may be entirely unused in one section of the country may be frequently in use in another.

c. List of Changes of Latin officinal Names.

d. List of Changes of English officinal Names.

¶ One member of the Committee thinks that the preceding 4 lists will take up more room than their value seems to justify.

e. Tables of Weights and Measures.

¶ These tables may be like those at present appended to the U. S. Ph.

The following Tables are proposed as new Additions:

f. Table of largest single and daily Doses of Powerful Remedies.

¶ As it is often very difficult to state what the average adult dose of a given remedy should be, except this statement be accompanied by therapeutical notes, it will not be advisable to specify the doses of the officinal remedies in the text. It may, however, be of advantage to append a list of the dangerous or powerful remedies, with their largest single or daily doses, which the pharmacist should not exceed unless he has positive knowledge that the physician intended the excess.

g. Table of Solubilities of the officinal Chemicals in Water and in Alcohol, at 15.5° C. (=60° F.), and at their boiling point.

¶ It would be very useful to have the solubility of these substances determined for various grades of alcohol; namely, for that of the spec. grav. 0.820 (see *Alcohol* in the following Report), and for that of the spec. grav. 0.941, which represents most of the tinctures.

h. Alcoholometrical Table.

¶ In view of the necessity of weighing alcohol for use in the new formulæ, a detailed table giving the relationship between weight and volume of alcohol of various percentages, and at various temperatures, is desirable. Such a table has been published by Dr. E. R. Squibb in *Proceed. Amer. Pharm. Assoc.*, vol. 21, 566.

i. Acidimetrical Tables.

¶ That is, tables of the spec. grav. and percentage strength of the officinal liquid acids. These tables are not necessary, but would be a useful addition.

k. List of Reagents, for qualitative and quantitative—including volumetric—use, of a fixed strength or dilution, and accompanied by a brief statement of their use.

l. Table of the Elementary Substances, with their symbols, atomicity, atomic weight, etc.

¶ One member of the Committee prefers to have all chemical formulæ given in this table, instead of quoting them in the text (see No. 7). Another member considers the table unnecessary.

m. Weight and Volume Table. To facilitate the use of parts by weight (or, of the decimal system), in compounding, prescribing, and dispensing medicines, a table exhibiting the relationship between the weight and the measure of a given volume of any liquid preparation may be added. This should contain all the officinal liquids in alphabetical order.

¶ The table may have about the following shape:

Decimal.		Name of Preparation.	Apothecaries'.	
1000 cc. weigh: (or spec. grav.)	1000 gm. measure:		1000 min. weigh:	1000 grs. measure:
1047 gm.	955 cc.	Acidum Aceticum	994 grs.	1005 min.
1212 "	825 "	Acidum Lacticum	1151 "	862 "
1160 "	862 "	Acidum Muriaticum	1101 "	907 "
1420 "	754 "	Acidum Nitricum	1348 "	741 "
1843 "	542 "	Acidum Sulphuricum	1749 "	571 "
935 "	1070 "	Acidum Valerianicum	887 "	1126 "
750 "	1333 "	Aether	712 "	1403 "
1000 "	**1000** "	**Aqua**	**949** "	**1053** "
835 "	1198 "	Alcohol	793 "	1265 "
818 "	1222 "	Alcohol Amylicum	776 "	1287 "
941 "	1063 "	Alcohol Dilutum	893 "	1117 "
817 "	1224 "	Alcohol Fortius	776 "	1288 "
1490 "	671 "	Chloroformum	1414 "	706 "
1250 "	800 "	Glycerina	1187 "	842 "
1355 "	738 "	Liquor Ferri Chloridi	1286 "	778 "
1317 "	759 "	Syrupus	1250 "	799 "

The first column of this table at the same time indicates the specific gravities of the liquids (according to the present U. S. Ph.), at 15.5° C. (=60° F.).

n. Table of the Specific Gravity of officinal Liquids between 10 and 25° C. (=50–77° F.).

¶ Such a table would be very useful. Similar tables already exist in some foreign pharmacopœias.

o. A Table comparing the Strength of powerful Galenical Preparations of foreign Pharmacopœias, used in this country, with those of our own.

¶ Instead of appending a separate table, these differences of strength may be briefly indicated in the list of synonyms following each heading. See above, under No. 3. Two members of the Committee favor a separate table.

p. A Table exhibiting the Differences in Strength of the Preparations, as made according to the present and the new U. S. Ph.

q. A Table of Thermometric Equivalents.

¶ Proposed by one member. See above, under 12.

r. A Table of Poisons and their Antidotes.

¶ Such a table was recommended in the first circular issued by the Chairman, but, during the discussion of the proposed Principles at the meeting of the Committee held at New York, it was decided not to recommend its introduction. Still, it is but proper to state that several members of the Committee still favor such a table, "accompanied with directions as to the management of patients until the arrival of a physician."

s. A full Index containing all the Synonyms should conclude the book.

Explanations of Signs and Abbreviations.

* A star before a title, or part of a title, denotes that either the whole article, or that portion of the title before which it is placed, is new.

d An italic *d*, placed behind a title, denotes that the article is proposed to be dropped from the Pharmacopœia, in consequence of recommendations to this effect, received from one or more correspondents.

? has been added after the names of substances the usefulness of which may be doubted; or, which have only recently been proposed.

Germ. Pharm. Rep. denotes the Report of the Committee on the Pharmacopœia, of the German Pharmaceutical Association. (BERICHT DER PHARMACOPÖE-COMMISSION DES DEUTSCHEN APOTHEKER-VEREINS, nach den Arbeiten der einzelnen Commissions-Mitglieder zusammengestellt vom Vorsitzenden der Commission, Dr. Chr. Brunnengräber, Rostock, October, 1879, 4to, pp. 58.) The committee consisted of Mr. Biltz, Prof. Flückiger, Dr. Hirsch, Mr. Hobe, Mr. Schering, Mr. Schneider, Dr. H. Trommsdorf, and Dr. Chr. Brunnengräber.

See List of *Errata* and *Addenda* at end.

REPORT

ON THE

REVISION OF THE U. S. PHARMACOPŒIA.

N. B.—The Formulæ contained in this Report should not be substituted for those at present officinal, until they have been submitted to and (eventually) adopted by the next Pharmacopœia Convention.

Absinthium.

Acacia. *Gum Arabic.*

¶ The source of the finest commercial Gum Arabic is now known to be *Acacia Senegal* Willd. (=*A. Verek* Guillemin et Perrotet). *Acacia arabica* Willd. (=*A. nilotica* Desfont) and other species only yield brownish or reddish sorts. See *Pharmacographia* [2], 233.

Acetum. *Vinegar.*

¶ See remarks to *Acetum Destillatum.*

***Acetum Aromaticum.** *Aromatic Vinegar.*

Take of	Glacial Acetic Acid, *forty parts*	40
	Spirit of Lavender, *eight parts*	8
	Spirit of Juniper, *eight parts*	8
	Spirit of Cinnamon, *four parts*	4
	Spirit of Lemon, *four parts*	4
	Acetic Ether, *four parts*	4
	Starch, *eight parts*	8
	Alcohol ("Strong. Alc."), *seventy parts*	70
	Water, *three hundred parts*	300

Dissolve the Spirits and the Acetic Ether in the Alcohol, and add the Glacial Acetic Acid. Then very gradually add the Water, shaking after each addition. Rub the Starch with a small quantity of the turbid liquid until it forms a uniform mixture, then add the remainder of the liquid, and filter through a wetted filter.

¶ This is used in considerable quantities in some parts of the country, particularly in hospitals, as a grateful perfume and lotion for the body. The above formula is much easier of execution than that of the Germ. Ph., and yields a fine product.

Acetum Destillatum. *Distilled Vinegar.*

Take of Vinegar, *eight parts* 8

Distil, by means of a sand-bath, from a glass retort into a glass receiver, *seven parts* 7

Distilled Vinegar may be substituted for Diluted Acetic Acid in the preparation of the officinal vinegars.

¶ Instead of quoting here the tests of the U. S. Ph., it might be stated that both the crude and the distilled Vinegar should be dropped from the Ph. entirely, since at the present time pure and cheap Acetic Acid has become a more abundant article in the market than pure vinegar.

Acetum Lobeliæ. *Vinegar of Lobelia.*

Take of Lobelia, in moderately coarse powder, *one part* . . . 1
Diluted Acetic Acid, *a sufficient quantity* . . . q. s.

Moisten the powder with one-half of its weight of Diluted Acetic Acid, pack it firmly in a conical glass percolator, and gradually pour upon it Diluted Acetic Acid, until the percolate weighs *eight parts* . . 8

This vinegar may also be prepared by macerating
Lobelia, in moderately coarse powder, *one part* 1
in Diluted Acetic Acid, *eight parts* 8
for seven days, then expressing the liquid, washing the residue with sufficient Diluted Acetic Acid, and filtering, so that the product weighs *eight parts* 8

¶ As ordinarily conducted, the alternate processes of percolation and maceration do not generally yield entirely identical products. Percolation, which has the advantage of cleanliness, neatness, and dispatch, introduces personal errors, arising from differences in packing and other minor causes, whereby the menstruum, instead of fully penetrating each particle of powder, and fully charged with the soluble constituents, may find its way between the particles without entirely penetrating them, so that two tinctures prepared by two different persons from the same powder with the same menstruum, although both *weighing* an equal number of parts, will probably represent different proportions of constituents and menstruum, in equal weights as well as in equal measures of the product. The process which yields the truest results is maceration, that is, bringing together the accurately weighed substance and menstruum, and allowing the latter to penetrate the former thoroughly, by prolonged contact. When the liquid, both inside and outside of the particles of the substance, has become perfectly uniform in composition, it is removed by expression. The quantity of expressed liquid obtained depends on the power applied, either by hand or by a press, and does not depend on professional skill. Of course, the whole of the liquid cannot be separated, as a portion is retained by the substance, even under the strongest pressure, but this is of no importance, since every portion of the liquid, either separated from or still retained in the substance, is of uniform composition, and the only difference will be that he who possesses the strongest power, will have a larger quantity of product to use or to sell. It is, theoretically, wrong to add fresh liquid to the residue, and by renewed expression to make up to a certain quantity, because this action is again liable to introduce a personal error.

It must not be inferred, however, that the writer (or, so far as he is aware, any member of the Committee) recommends the abandonment of the process of percolation for that of maceration. The object of making the above statements is simply to

show that practical pharmacists are perfectly aware of the necessity of using due care in following the process of percolation. The great advantage of obtaining, by a clean process, at once a bright filtered percolate in a moderately short time, is believed to outweigh the trifling, and (as experiment has shown) in most cases almost insignificant differences of products obtained by maceration.

Acetum Opii. *Vinegar of Opium. Black Drop.*

Take of Opium, dried and in moderately coarse powder, *six parts* 6
Nutmeg, in moderately coarse powder, *one part* . . 1
Sugar, *ten parts* 10
Diluted Acetic Acid, *a sufficient quantity* . . . . q. s.

Macerate the Opium and Nutmeg in Diluted Acetic Acid, *twenty parts* . . . . . 20 for twenty-four hours. Put the mixture into a conical glass percolator and return the liquid which first passes, until the percolate becomes clear. Then gradually pour on Diluted Acetic Acid until the percolate weighs *twenty-six parts* . . . . . 26 In this dissolve the Sugar, and, having strained the solution, add sufficient Diluted Acetic Acid through the strainer to make the product weigh *forty parts* 40

Present Formula.		Approximations.	
Opium, 5 ʒ. . . .	2,400 grs.	12	6
Nutmeg, 1 ʒ. . . .	480 "	2	1
Sugar, 8 ʒ. . . .	3,840 "	19	10
Dil. Acet. Ac. . . .			
Total Product, 32 fl. ʒ . .	15,972 "	80	40

The spec. grav. of Acet. Opii, prepared according to the present U. S. Ph., is about 1.078. One grain of opium is contained in 6.65 *grains*, or in 6.4 *minims* of the product. When prepared by the process given above, 1 grain of opium is contained in 6.6 gr. of product, being therefore identical with the former.

It seems, however, about time to abolish the useless and perplexing differences in strength of the liquid opium preparations. The choice of one or another of these, on the part of the prescribing physician, is not induced by the relative quantity of opium each contains, but by the peculiar properties imparted to it through particular processes or combinations. How many physicians retain the different opium-strength of all these preparations in their memory, and, for that matter, how many of them, when prescribing, pay any attention to it? As we are about changing our pharmacopœial processes by the exclusive use of parts by weight, *now* is the proper time to introduce a much-needed reform, namely, to make *all* liquid opium preparations, with the exception of Paregoric, of the strength of 10%. The previous and the proposed strength of liquid opium preparations of the U. S. Ph. is then:

Name of Preparation.	Present U. S. Ph.	Future U. S. Ph.
	1 grain of Opium rep. by	1 grain of Opium rep. by
Acetum Opii .	6.4 min.	10 grains.
Tinct. Opii . .	12.8 "	10 "
Tinct. Opii Acetata	10 "	10 "
Tinct. Opii Deodorata	12.8 "	10 "
Vinum Opii .	8 "	10 "
Tinct. Opii Camphorata	256 "	250 "

This change would not be violent, and would insure the proportions to be readily retained by the memory.

The formula for *Acetum Opii* would then become, as near as may be expressed in percentage:

Opium, dried, and in moderately coarse powder, *ten parts*	10
Nutmeg, in moderately coarse powder, *two parts*	2
Sugar, *twenty-five parts*	25
Diluted Acetic Acid, *a sufficient quantity*	q. s.
To make the whole product weigh *one hundred parts*	100

Acetum Sanguinariæ. *Vinegar of Bloodroot.*

Take of Bloodroot, in moderately coarse powder, *one part* . . 1
Diluted Acetic Acid, *a sufficient quantity* . . . q. s.

Moisten the powder with one-half of its weight of Diluted Acetic Acid, pack it firmly in a conical glass percolator, and gradually pour upon it Diluted Acetic Acid until the percolate weighs *eight parts* . . . 8

This vinegar may also be prepared by macerating
Bloodroot, in moderately coarse powder, *one part* 1
with Diluted Acetic Acid, *eight parts* 8
for seven days, then expressing the liquid, washing the residue with sufficient Acetic Acid, and filtering, so that the product weighs *eight parts* 8

Acetum Scillæ. *Vinegar of Squill.*

Take of Squill, sliced, *one part* 1
Diluted Acetic Acid, *a sufficient quantity* . . . q. s.

Moisten the Squill with four times its weight of Diluted Acetic Acid and when the latter has been absorbed, pack the swelled mass into a conical glass percolator, and pour Diluted Acetic Acid on top, until the percolate weighs *eight parts* 8

This vinegar may also be prepared by macerating
Squill, sliced, *one part* 1
with Diluted Acetic Acid, *eight parts* 8
for seven days, expressing the liquid, washing the residue with sufficient Diluted Acetic Acid and filtering, to make the product weigh *eight parts* 8

Achillea (*d*).

Acida. *Acids.*

¶ Dr. B. Hirsch, in a pamphlet discussing the general principles which should be followed in constructing a pharmacopœia,† proposes to make the solutions of alkalies, acids, and other chemicals of such a strength that equivalent quantities of the solutions would saturate each other chemically. Thus, 100 parts of diluted hydrochloric, sulphuric, nitric, acetic, or phosphoric acid should saturate and neutralize exactly 100 parts of water of ammonia, solution of potassa or soda, solution of carbonate of potassium. The strength should be so arranged that each 100 grammes of a solution contain one-half or one-fourth (in the case of acids which saturate two

† *Ueber die der Bearbeitung einer Pharmakopöe zu Grunde zu legenden Principien.* Von Dr. B. Hirsch, Apotheker. 4to, Berlin, 1876, p. 19.

atoms of base) of the molecular weight of the substance in grammes, so that 200 grammes—or 400 grammes, as the case may be—of the solution are equivalent to the full molecular weight. We would then have the following solutions:

Solution of, or Diluted	Contains in 100 grammes	Spec. Grav.
Sulphuric Acid,	24.5 gm. of H_2SO_4,	1.175.
Nitric Acid,	31.5 " of HNO_3,	1.195–1.196.
Hydrochloric Acid,	18.25 " of HCl,	1.089–1.090.
Acetic Acid,	30. " of $C_2H_4O_2$,	1.042.
Phosphoric Acid,	24.5 " of H_3PO_4,	1.148–1.149.
Ammonia,	6.5 " of NH_3,	0.965–0.966.
Potassium Carbonate,	34.5 " of K_2CO_3,	1.352–1.353.
Potassa,	23.5 " of KHO,	1.265–1.275.
Soda,	15.5 " of NaHO,	1.224–1.228.

Acidum Aceticum.

Acidum Aceticum Dilutum. *Diluted Acetic Acid.*

Take of Acetic Acid, *one part* 1
Distilled Water, *seven parts* 7

Mix them.

Char.—Diluted Acetic Acid has the spec. grav. 1.006 (?); and one hundred parts of it neutralize parts of bicarbonate of potassium. It is affected by reagents in the same manner as Acetic Acid.

*** Acidum Aceticum Glaciale.—Acidum Arseniosum.**

Acidum Benzoicum. *Benzoic Acid.*

¶ The *Germ. Pharm. Rep.* has the following: Benzoic acid is soluble in 500 parts of water at 15° C., in 15 parts of water at 100° C., and in 1 part of alcohol of 0.830 at its boiling point. *Test for Cinnamic Acid:* 0.1 gm. of benzoic acid is triturated with 0.1 gm. of permanganate of potassium, the whole heated with 1 cc. of water, in a closed test-tube, to 60° C., then allowed to cool. Any odor of oil of bitter almonds, which may now be perceptible, is due to cinnamic acid. On rubbing together 1 gm. of benzoic acid and 0.5 gm. of permang. of potassium in a mortar, even in the cold, the odor of oil of bitter almonds will become obvious, if cinnamic acid be present. Benzoic acid must be soluble in pure, cold, concentrated sulphuric acid; on gently warming, the solution must not turn more than brownish. Poured into water, the benzoic acid is again separated as a white precipitate, and the liquid is colorless. It should not possess an odor recalling that of urine.

*** Acidum Boracicum.—A. Carbolicum.—A. Carbolicum Impurum.—A. Chromicum.**

*** Acidum Chrysophanicum.** *Chrysophanic Acid.*

¶ Although it has been shown that the substance known by this name, and chiefly obtained from Goa-powder, is in reality no acid, the name seems to have become so well established that it will be awkward to change.

Acidum Citricum. *Citric Acid.*

¶ A test for lead is to be added.

Acidum Gallicum.

*** Acidum Hydrobromicum Dilutum.** *Diluted Hydrobromic Acid.*

Take of	Bromide of Potassium, *six parts*	6
	Sulphuric Acid, spec. gr. 1.838 at 15.6° C. (60° F.); or spec. gr. 1.828 at 25° C. (77° F.), *seven parts* . . .	7
	Water, *nine parts*	9
	Distilled Water, *a sufficient quantity*	q. s.

Add the Sulphuric Acid to Water, *one part* 1
and cool the mixture. Then dissolve the Bromide of Potassium in
Water, *six parts* 6
by the aid of heat, supplying the loss of water by evaporation during the heating. Pour the Diluted Sulphuric Acid into the hot solution with constant stirring, and set the mixture aside for twenty-four hours, so that the sulphate of potassium may crystallize. Pour off the liquid into a retort, break up the crystalline mass, transfer it to a funnel, and having drained the crystals, drop slowly upon them Water, *two parts* . . 2
so as to displace and wash out the acid liquid. Add the liquid thus drained off and washed out to that in the retort, and distil the whole nearly to dryness, or until nothing further distils off by moderate heating. Then add to it such an amount of Distilled Water that 20 test-parts of pure and dry Carbonate of Calcium are accurately saturated by 95 test-parts of the Acid.

Char.—A limpid, colorless, odorless liquid, of a strongly acid taste, having a spec. gr. of 1.274 at 15.6° C. (60° F.), or of 1.257 at 25° C. (77° F.). It yields no precipitate, or at most only a faint cloudiness with chloride of barium (absence of more than traces of sulphuric acid). When pure zinc is added to it, it yields a gas which does not blacken paper moistened with solution of acetate of lead (absence of sulphurous acid). On evaporation it yields no residue, or at most only a trace.

¶ This is Dr. E. R. Squibb's process, with the exception of the method of assay. The method proposed above is believed to be more expeditious and sufficiently exact: $CaCO_3(100)+2HBr(2\times81=162)=CaBr_2+CO_2+H_2O$; as we wish to produce an acid of 34% HBr, we find that 162 parts of 100% acid corresponds to 476.47 parts of a 34% acid. Hence 476.47 parts of the acid saturate 100 parts of $CaCO_3$, or in smaller proportion, 95 [short for 95.3] parts of the acid saturate 20 parts of $CaCO_3$.

The term "test-parts" means such small parts (grains or centigrammes, etc.) as are usually chosen for tests, in contradistinction to the larger "working parts" of a formula.

Acidum Hydrochloricum. *Hydrochloric Acid.*

SYN. Acidum Muriaticum. *Muriatic Acid.*

¶ It is proposed to drop the antiquated name "Muriatic."

Acidum Hydrochloricum Dilutum. *Diluted Hydrochloric Acid.*

SYN. Acidum Muriaticum Dilutum. *Diluted Muriatic Acid.*

Take of	Hydrochloric acid, *one part*	1
	Distilled Water, *three parts*	3

Mix them.

¶ Diluted Muriatic Acid of the present U. S. Ph. has the spec. gr. 1.088.
Without taking account of any contraction of the mixture, 1 pint would consist of:

HCl (spec. gr. 1.160)	1,744 min.	or 1,920 grs.
H_2O	5,936 min.	or 5,635 grs.
	7,680 min.	7,555 grs.

The nearest approach to the relative weight of HCl and H_2O is:

1,920 : 5,635 :: 1,920 : 5,769 :: 1 : 3

which will slightly alter its spec. gr.

Acidum Hydrocyanicum Dilutum. *Diluted Hydrocyanic Acid.*

Take of	Ferrocyanide of Potassium, in mod. fine powder, *twenty parts*	20
	Sulphuric Acid, *ten parts*	10
	Diluted Alcohol, *sixty parts*	60
	Distilled Water, *a sufficient quantity*	q. s.

Introduce the Ferrocyanide of Potassium into a tubulated retort, and pour upon it Distilled Water, *forty parts* 40
Connect the neck of the retort, which is to be directed upwards, by means of a bent glass tube with a well-cooled Liebig's condenser, the delivery tube of which terminates in a receiver containing
Diluted Alcohol, *sixty parts* 60
so that the end of the tube almost touches the surface of the liquid during the whole distillation. All the joints of the apparatus excepting the neck of the receiver having been made tight, pour into the retort through the tubulure a mixture of Sulphuric Acid, *ten parts* 10
and Distilled Water, *ten parts* 10
Agitate the retort gently, and then heat it, standing in a sand-bath until the contents are in brisk ebullition, and continue the heat regularly until there is but little liquid mixed with saline mass remaining in the retort. Detach the receiver, and add to its contents
Distilled Water, *a sufficient quantity* . . . . . q. s.
so that 100 test-parts of the product shall be accurately precipitated by 12.7 test-parts of nitrate of silver.

Diluted Hydrocyanic Acid, when wanted for immediate use, may also be prepared in the following manner:

Take of	Cyanide of Silver, *fifty parts*	50
	Hydrochloric Acid, *forty-one parts*	41
	Distilled Water, *forty-six parts*	46

Mix the Hydrochloric Acid with the Distilled Water, add the Cyanide of

Silver, and shake the whole together in a glass-stoppered vial. When the precipitate formed has subsided, pour off the clear liquid and keep it for use.

Diluted Hydrocyanic Acid must be kept in small, well-corked bottles, protected from the light.

Char.—A colorless liquid, having a peculiar odor, and wholly volatilized by heat. It imparts a faint, evanescent red color to litmus, and is not discolored by hydrosulphuric acid. With solution of nitrate of silver, added in slight excess, 100 parts of it produce a white precipitate, which, when completely washed with water, and dried at a temperature not exceeding 100° C. (or 212° F.) weighs 10 parts, and is wholly soluble in nitric acid.

Diluted Hydrocyanic Acid, prepared by the above processes, contains 2 per cent of the anhydrous acid.

¶ The first of the above processes employs a portion of alcohol as a means of preserving the product. The writer has never used alcohol for this purpose, but he has made during a number of years many gallons of the acid, each separate lot of which was mixed with 0.1% of pure sulphuric acid, without the contents of a single bottle ever spoiling, even on long keeping.

Acidum Lacticum.—**A. Muriaticum** (see **A. Hydrochloricum**).—**Acidum Nitricum.**

Acidum Nitricum Dilutum. *Diluted Nitric Acid.*

Take of	Nitric Acid, *two parts*	2
	Distilled Water, *nine parts*	9

Mix them.

¶ The spec. grav. of the Dil. Nitric Acid of the present U. S. Ph. is 1.068. One pint of this consists of 1,440 grains of Nitric Acid and 6,347 grains of Water, being in the proportion of 2 to 9 (nearly).

Acidum Nitrohydrochloricum. *Nitrohydrochloric Acid.*
SYN. *Acidum Nitromuriaticum.* *Nitromuriatic Acid.*

Take of	Nitric Acid, *three parts*	3
	Hydrochloric Acid, *five parts*	5

Mix the acids in an open glass vessel, and when effervescence has ceased, keep the product in a glass-stoppered bottle, in a cool place, protected from the light.

Char.—A liquid of a deep golden-yellow color, possessing the odor of chlorine. It readily dissolves gold-leaf, and is wholly volatilized by heat. It should be preserved in a dark and cool place.

Acidum Nitrohydrochloricum Dilutum. *Diluted Nitrohydrochloric Acid.*
SYN. *Acidum Nitromuriaticum Dilutum.* *Diluted Nitromuriatic Acid.*

Take of	Nitric Acid, *one part*	1
	Hydrochloric Acid, *two parts*	2
	Distilled Water, *twelve parts*	12

Mix the acids in a glass-stoppered bottle, having the capacity of the intended product. Shake them together occasionally during 24 hours, and then add the water. Keep in a cool place, protected from the light.

¶ These are as nearly as possible the present proportions.

*** Acidum Oleicum.** *Oleic Acid.*

¶ The *Germ. Pharm. Rep.* has the following: An oily liquid of a yellow to yellowish-brown color, insoluble in water, but completely soluble in its own weight of alcohol of 0.830. It is completely saponified by carbonate of potassium at a gentle heat. At a temperature of 10–12° C. about one-half of its bulk, and below 4° C. the whole of it congeals to a whitish crystalline mass (*Hirsch*). Equal volumes of oleic acid and of alcohol of 0.830, heated to 25° C., should give a clear solution, without separation of oily drops on the surface.

The "Acidum Oleicum" of the pharmacopœia may be at once defined as "deprived of the more solid fatty acids." However, a separate "Acidum Oleicum Purificatum" may be introduced.

Acidum Oxalicum.

*** Acidum Phosphoricum Fortius.** *Stronger Phosphoric Acid.*

Take of	Phosphorus, *three parts*	3
	Nitric Acid, *a sufficient quantity*	q. s.
	Distilled Water, *a sufficient quantity*	q. s.

Mix Nitric Acid, *twenty-five parts* 25
with Distilled Water, *twenty-five parts* 25
in a porcelain capsule of twice the capacity of the intended product. Add the Phosphorus, cut into small pieces, and invert over the capsule a glass funnel of such dimensions that its rim may rest on the inside, above the surface of the liquid. Place the capsule on a sand-bath, and apply a moderate heat, until the reaction is seen to commence. Regulate the heat carefully, so as to prevent the reaction from becoming too violent, or, if need be, check it by the addition of a little Distilled Water. If red vapors cease to be evolved before the Phosphorus is all dissolved, add gradually more Nitric Acid, diluted with an equal weight of Distilled Water, until solution is effected. Then, having removed the funnel, continue the heat, until the excess of Nitric Acid is driven off, and there remains a syrupy liquid, free from odor and weighing *eight parts* [?] . 8

Test a small sample for phosphorous and arsenic acids by the methods indicated in the note. Should phosphorous acid be present, add to the syrupy liquid a mixture of
Nitric Acid, *two parts* 2
and Distilled Water, *two parts* 2
and again evaporate until the excess of Nitric Acid is driven off, and the product weighs *eight parts* [?] 8
If arsenic acid be present, dilute the syrupy liquid with
Distilled Water *forty parts* 40
warm gently, and pass through it a stream of hydrosulphuric acid gas,

until it is thoroughly saturated with the latter. Then close the vessel tightly, set it aside for 24 hours, filter the liquid, heat it until all excess of the gas has been driven off, again filter, and finally evaporate, until the residue weighs *eight parts* 8

Char.—A colorless, inodorous, syrupy liquid, of the spec. grav. . . . Having diluted two small samples of it with 5 volumes of water, and having gently warmed each, the first is not rendered black by nitrate of silver, nor the second turned white or whitish by bichloride of mercury (absence of phosphorous acid). A sample diluted with 5 volumes of water, and gently warmed, does not deposit a bright-yellow sediment, after being saturated with sulphuretted hydrogen, and standing at rest for some time (absence of arsenic acid). A crystal of pure sulphate of iron introduced into a cold mixture of equal parts of sulphuric acid and of the syrupy acid does not produce a black or brownish color in the liquid. No precipitate is produced by chloride of barium (absence of sulphuric acid), or nitrate of silver (absence of hydrochloric acid), when either of them are added in small proportion. When diluted with . . . parts of water, so as to be of about the spec. gr. 1.056–1.060, it produces no precipitate with an equal bulk of tincture of chloride of iron after standing for several hours (absence of pyro-, and metaphosphoric acids).

100 parts of it are saturated by . . . parts of bicarbonate of potassium and no precipitate is produced.

¶ There can be no question but that a stronger acid should be made officinal than one of spec. grav. 1.056, and that the alternative process of the present U. S. Ph., in which the glacial acid is used, should be abandoned, owing to the impurities always present in the latter. It remains to be decided what strength should be given to the officinal acid. A very pure and concentrated acid, of spec. gr. 1.700, is now made on the large scale, and large quantities of it imported into this country. This appears to be the most advantageous. Others have advocated an acid of spec. gr. 1.350. This may be prepared by adding to 32 parts of the strong acid (sp. gr. 1.700) 21 parts of water.

Acidum Phosphoricum Dilutum. *Diluted Phosphoric Acid.*

Take of Stronger Phosphoric Acid, *parts*
Distilled Water, *parts*
Mix them.

¶ The proportion of water and stronger acid depends on the strength of the latter recognized by the future U. S. Ph. At present the spec. grav. of Diluted Phosphoric Acid is 1.056, which corresponds to 7.39% of P_2O_5.

Acidum Phosphoricum Glaciale (*d*).

*** Acidum Salicylicum.** *Salicylic Acid.*

¶ The *Germ. Pharm. Rep.* has the following: White, light, needle-shaped crystals, soluble in 300 parts of cold, more easily in boiling water and very easily soluble in alcohol, ether, and hot chloroform. When heated, it volatilizes, accompanied with the odor of carbolic acid, without leaving any residue. The aqueous solution of the acid is colored violet-red by a few drops of solution of chloride of iron. A solution of 1 part of the acid in 10 parts of alcohol, mixed with a few drops of nitric acid, should not become turbid on the addition of solution of nitrate of silver. The alcoholic solu-

tion, when allowed to evaporate spontaneously, should leave a perfectly white residue (*Schering*).

Acidum Sulphuricum.

Acidum Sulphuricum Aromaticum. *Aromatic Sulphuric Acid.*

Take of	Sulphuric acid, *twelve parts*	12
	Ginger, in moderately fine powder, *two parts*	2
	Cinnamon, in moderately fine powder, *three parts*	3
	Alcohol, *a sufficient quantity*	q. s.

Add the Acid gradually to Alcohol (Strong. Alc."), *twenty-five parts* 25 and allow the liquid to cool. Mix the Ginger and Cinnamon, and, having packed them firmly in a conical percolator, pour Alcohol gradually upon them, until the percolate weighs *twenty-six parts* 26

Lastly mix this with the diluted acid.

	Present Formula.		Approximation.
Sulphuric Acid	6 ʒ	2,880 grs.	12
Ginger	1 ʒ	480 "	2
Cinnamon	1⅔ ʒ	720 "	3
Alcohol	1 O	6,088 "	25
Tincture	1 O	ab. 6,240 "	26

Acidum Sulphuricum Dilutum. *Diluted Sulphuric Acid.*

Take of	Sulphuric Acid, *one part*	1
	Distilled Water, *seven parts*	7

Add the Acid gradually to the Distilled Water.

Char.—The spec. grav. of this acid is

¶ 1 pint of Ac. Sulph. Dil. of the present U. S. Ph. (spec. gr. 1.082) weighs 7,880 grs., and contains 960 grs. of H_2SO_4, and 6,988 grs. of H_2O, which is very nearly in the proportion of 1 to 7.

Acidum Sulphurosum. *Sulphurous Acid.*

Take of	Sulphuric Acid, *eight parts*	8
	Charcoal, in coarse powder, *one part*	1
	Distilled Water, *thirty-four parts*	34

Pour the Acid upon the Charcoal, previously introduced into a flask, and shake them together. Connect the flask, which should be provided with a safety-tube, with a washing-bottle, and this, by means of a bent glass tube, reaching nearly to the bottom of it, with a two-necked bottle containing the Distilled Water. To the other neck of this bottle attach another bent tube, and let it dip slightly into a solution of carbonate of sodium. All the joints having been properly luted, apply heat to the flask, imbedded in a sand-bath, until gas ceases to be evolved, preventing the temperature of the Distilled Water from rising, by means of cold water applied to the bottle containing

it. Lastly pour the Sulphurous Acid into dark orange-colored glass-stoppered bottles of the capacity of 240 cubic centimetres, or 8 fl. ounces, and keep them in a cool and dark place.

Char.—Characteristics the same as in the present U. S. Ph.

¶ The proportions are the same as at present.

Acidum Tannicum.—A. Tartaricum.—A. Valerianicum.

Aconitia. *Aconitia.*

¶ If the present preparation is to be retained, it should rather be called "Aconitinum," as it is a mixture of several active principles. If "Aconitia" is to be retained, the process should be altered in accordance with the results of the investigations of C. R. A. Wright; or its characteristics should be so worded as to apply to the pure alkaloid.

Aconiti Folia.—Aconiti Radix.—Adeps.

*** Adeps Jasmini.** *Jasmine Pomade.*

¶ This is placed here because it has been decided to introduce a formula for Cologne, and the ingredients for preparing the latter should also be introduced. See *Spiritus Odoratus.*

Æther.

*** Æther Aceticus.** *Acetic Ether.*

¶ The Germ. Phar. defines it as "a colorless liquid, free from acid, and having a spec. gr. of 0.900–0.904. Shaken with an equal volume of water, the latter should not increase in bulk more than one-tenth." The *Germ. Pharm. Rep.* remarks on this: "The water used for shaking up with the ether is to be slighly tinged with blue litmus solution; in this manner the test for free acid and for alcohol may be performed at the same time."

Æther fortior.

Alcohol. *Alcohol.*

Spirit of the specific gravity 0.820 at 15.6° C. (=60° F.) or 0.812 at 25° C. (=77° F.), containing 91 parts by weight and 94 parts by measure of absolute alcohol.

¶ It is proposed to drop the term "Alcohol," as applied in the present U. S. Ph. to an alcohol of the spec. gr. 0.835, and to apply it to the "Stronger Alcohol," which the U. S. Ph. heretofore designated as "Alcohol fortius." There is no need of having three kinds of alcohol in the pharmacopœia: the strong, the common, and the dilute. Alcohol of about 94 (93–94% by vol.) may be readily obtained in the market, and the other grades may be made from it. Alcohol fortius was heretofore defined as having a spec. gr. of 0.817, but this appears to be a higher grade alcohol than the market generally affords; hence the spec. grav. 0.820 is suggested as probably representing the average strength of the commercial, so-called 95% alcohol.

The *Germ. Pharm. Rep.* adds this test: Mixed with ammonia, it must remain colorless. Any tannin present would at once cause the mixture to assume a brownish color.

Alcohol Amylicum.—* **Alcoholaturæ** (see **Tinct. ex Herb. Rec.**).—* **Alcohol Deodoratum** (*? for Cologne*).

Alcohol Dilutum. *Diluted Alcohol.*

Take of	Alcohol (as above described), *three parts*	3
	Distilled Water, *four parts*	4

Mix them.

The specific gravity of this Diluted Alcohol is 0.941 (nearly).

Diluted Alcohol of this specific gravity may be made from Alcohol of any strength by either of the following rules, in which all terms are understood to denote weight:

1. Divide the alcoholic percentage strength of the alcohol to be reduced by thirty-nine (39), and subtract one (1) from the quotient. This gives the number of parts of water to be added to one part of the alcohol to be reduced (*Tidball*).

2. Subtract 39 times the percentage of water in the alcohol to be reduced from 61 times the percentage of absolute alcohol in the same alcohol, and divide the difference by 3900. The quotient will express the number of parts of water to be added to 1 part of the alcohol (*Wenzell*).

Alcohol Fortius (*d*; see **Alcohol**).

Allium.—* **Aloinum** (?).—**Aloe Barbadensis.**—**Aloe Capensis.**

Aloe Purificata. *Purified Aloes.*

Take of	Socotrine Aloes, *eight parts*	8
	Alcohol ("Strong. Alc."), *one part*	1

¶ Directions same as at present.

Aloe Socotrina.—* **Alstonia** (?).—**Althæa.**—**Alumen.**—**Alumen Exsiccatum.**—**Aluminii et Potassii Sulphas.**—**Aluminii Sulphas.**—**Ammoniacum.**—**Ammonii Benzoas.**—**Ammonii Bromidum.**—**Ammonii Carbonas.**—**Ammonii Chloridum.**

Ammonii Chloridum Purificatum. *Purified Chloride of Ammonium.*

¶ The process should be improved by directing the ammonia to be added to the solution, after the heat has been removed, and the solution is merely warm; and to filter after the solution has stood for some time and become quite cold.

Ammonii Iodidum.—**Ammonii Nitras.**—* **Ammonii Phosphas** (?).—**Ammonii Sulphas.**—**Ammonii Valerianas.**—**Amygdala Amara.**—**Amygdala Dulcis.**

*** Amyl Nitris.** *Nitrite of Amyl.*

¶ The *Germ. Pharm. Rep.* gives the following characteristics: A pale-yellow liquid of a disagreeable odor, causing headache and a rush of blood to the throat. It is scarcely soluble in water, but miscible in all proportions with alcohol, ether, and

chloroform. It boils between 94° and 100° C. (201°–212° F.). Its spec. grav. is 0.878–0.882 at 15° C. It burns with a fawn-colored flame. On shaking 10 cc. of nitrite of amyl with 2 cc. of a mixture of water of ammonia (1 part) and water (9 parts), the latter should not redden blue litmus paper. Gently warmed with solution of nitrate of silver and water of ammonia, it should not turn black (*Bannow*).

Amylum.—Angustura (*d ?*).**—Anisum.—Anthemis.—Antimonii et Potassii Tartras.—Antim. Oxidum.—Antim. Oxysulphuretum.—Antimonium Sulphuratum.—Apocynum Androsæmifolium.—Apocynum Cannabinum.**

***Apomorphiæ Hydrochloras.** *Hydrochlorate of Apomorphia.*

¶ The *Germ. Pharm. Rep.* has the following: A grayish-white crystalline powder, mixed with small, colorless, shining crystals, and soluble in water. When exposed to damp air, it turns green. The aqueous solution should be colorless and neutral to test-paper; when warmed, it rapidly turns green without losing its neutral reaction. The salt is insoluble in ether and chloroform. Should it impart color to either of these liquids, it is to be rejected.

Aquæ. *Waters.*

Aqua.

Aqua Acidi Carbolici. *Carbolic Acid Water.*

Take of	Carbolic Acid, *two parts*	2
	Distilled Water, *ninety-eight parts*	98

Dissolve the Acid in the Distilled Water.

¶ The proportions directed by the present U. S. Ph. are 1 part of Carbolic Acid and 60.7 parts of Water. The Carbolic Acid is introduced in form of glycerite. The above formula directs the Acid itself, and makes the product 2%, or a trifle stronger.

Aqua Acidi Carbonici. *Carbonic Acid Water.*

¶ The present U. S. Ph. formula will answer.

Aqua Ammoniæ. *Water of Ammonia. Solution of Ammonia.*

Char.—A transparent, colorless liquid, of a very pungent odor, and leaving no residue when evaporated on a water-bath. It has the spec. gr. 0.960, and contains 10 per cent of ammoniacal gas.

One hundred parts of it are neutralized by 30 parts of officinal sulphuric acid, and the resulting hot liquid should be quite free from empyreumatic odor. It remains clear, or is at most only rendered slightly turbid when mixed with 5 times its volume of lime-water (absence of more than $\frac{1}{10}$% of carbonic acid: *Biltz*). When accurately saturated with nitric acid, and diluted with 5 volumes of distilled water, the liquid should remain clear on the addition of nitrate of silver (absence of chlorides), and chloride of barium (absence of sulphates). It should give no reaction, either before or after neutralization with nitric acid, on the addition of hydrosulphuric acid (absence of metallic oxides or salts). It should remain clear on the addition of oxalate of ammonium (absence of lime).

It should be preserved in glass-stoppered bottles in a cool place.

¶ The *Germ. Pharm. Rep.* has the following: 32 parts of water of ammonia (of 10%) should dissolve 11.1176 parts of air-dry crystallized oxalic acid, without effervescence, to a neutral, colorless, odorless, and clear liquid, which is not altered by sulphide of ammonium, nor, after addition of an acid, by sulphuretted hydrogen, even after standing for some time. Empyreumatic substances are recognized by allowing a sample of the water of ammonia to evaporate one-half, and saturating this with sulphuric acid; any empyreuma is then detected by the odor (*Flückiger*).—A test for impurities derived from the toluol series, by means of concentrated nitric acid, is to be added (*Bernbeck*).

Aqua Ammoniæ Fortior.

Aqua Amygdalæ Amaræ. *Bitter Almond Water.*

Take of	Oil of Bitter Almonds, *one part*	1
	Precipitated Phosphate of Calcium, *four parts*	4
	Distilled Water, *one thousand parts*	1000

Rub the oil first with the Precipitated Phosphate of Calcium and then with the Water, gradually added, and filter through a well-wetted filter.

¶ This preparation may be retained in the U. S. Ph., not as a medicinal, but as a *flavoring* agent. The amount of the hydrocyanic acid in the oil, even if still present, is so minute that it can have no important effect.

The present strength is 1 part of Oil in 908 parts of Water. The above formula renders the proportions more simple.

Precipitated Phosphate of Calcium has been substituted throughout for Carbonate of Magnesium as a medium of triturating and subdividing essential oils, etc. The former salt is soluble in water to the extent of only about 1 in 1,000,000, and it does not render the solutions alkaline, which latter property makes Carb. Mag. objectionable for medicated waters, as they are apt to precipitate alkaloids etc.

Aqua Anisi. *Anise Water.*

Take of	Oil of Anise, *one part*	1
	Precipitated Phosphate of Calcium, *four parts*	4
	Distilled Water, *five hundred parts*	500

Rub the Oil, first with the Precipitated Phosphate of Calcium, then with the Distilled Water, gradually added, and filter through a well-wetted filter.

Or:	Mix Anise, in coarse powder, *one part*	1
with Water, *twenty parts*		20
and distil off *ten parts*		10

¶ The present strength is 1 part of Oil in 520 of Water.

Aqua Aurantii Florum. *Orange Flower Water.*

Take of	Recent Orange Flowers, *two parts*	2
	Water, *ten parts*	10
Mix them, and by means of steam, distil off *five parts*		5

¶ Same strength as at present.

Aqua Camphoræ. *Camphor Water.*

Take of	Camphor, *four parts*	4
	Alcohol ("Stronger Alc."), *four parts*	4
	Precipitated Phosphate of Calcium, *eight parts*	8
	Distilled Water, *five hundred parts*	500

Dissolve the Camphor in the Alcohol, triturate the solution with the Precipitated Phosphate of Calcium, then with the Distilled Water, very gradually added, and filter through a well-wetted filter.

¶ This makes a stronger solution than the formula of the present U. S. Ph., owing to the slight increase in Alcohol, whereby the Camphor is more thoroughly incorporated with the first portions of the Water. The present proportions, reduced to weight are: Camphor, 3.78; Alcohol, 1; Carb. Magn., 7.6; Dist. Water, 460 parts.

Aqua Chlorinii. *Chlorine Water.*

Take of	Black Oxide of Manganese, in fine powder, *four parts*	4
	Hydrochloric Acid, *twenty-four parts*	24
	Water, *thirty parts*	30
	Distilled Water, *one hundred and fifty parts*	150

Introduce the Oxide into a flask, add the Acid, previously diluted with Water, *fifteen parts* . . . . . 15 and apply a gentle heat. Conduct the generated chlorine, by suitable tubes, through the remainder of the Water contained in a small wash-bottle, to the bottom of a bottle having the capacity of *five hundred parts* of Water, into which the Distilled Water has been introduced and the neck of which is loosely stopped with cotton. When the air has been entirely displaced by the gas, disconnect the bottle from the apparatus, and having inserted the stopper, agitate the contents, loosening the stopper from time to time, until the gas ceases to be absorbed. Lastly, pour the Chlorine Water into small bottles, provided with glass-stoppers, fill them to the neck, so as to exclude all air, close them securely, and keep them in a cool, dark place.

Char.—Chlorine Water is a greenish-yellow, clear liquid, possessing the suffocating odor of chlorine. It instantly decolorizes dilute solutions of litmus, indigo, and other vegetable coloring matters. When shaken with an excess of mercury until the odor of chlorine has disappeared, the remaining liquid, after filtration, should be at most but faintly acid (absence of more than traces of hydrochloric acid).

On adding *one hundred parts* of Chlorine Water to a solution, in dilute hydrochloric acid, of 2.25 parts of dry ferrous sulphate, prepared by precipitation with alcohol, the mixture does not decolorize a dilute solution of permanganate of potassium (presence of more than 0.3% of chlorine). On using 3 parts of dry ferrous sulphate in this test, the mixture, on the addition of solution of ferricyanide of potassium, assumes a blue color, or shows a blue precipitate (presence of less than 0.4% of chlorine).

Aqua Cinnamomi. *Cinnamon Water.*

Take of Oil of Ceylon Cinnamon, *one part* 1
Precipitated Phosphate of Calcium, *four parts* . . 4
Distilled Water, *five hundred parts* 500

Rub the Oil, first with the Precip. Phosphate of Calcium, then with the Water, gradually added, and filter through a well-wetted filter.

Or: Mix Ceylon Cinnamon, in coarse powder, *three parts* . . . 3
with Water, *forty parts* 40
and distil off *twenty parts* 20

¶ Same strength as at present.

Aqua Creasoti. *Creasote Water.*

Take of Creasote, *one part* 1
Distilled Water, *one hundred parts* 100

Mix them, and agitate the mixture until the Creasote is dissolved. Then filter through a well-wetted filter.

¶ The present strength is 1 to 116.

Aqua Destillata. *Distilled Water.*

Take of Water, *forty parts* 40

Distil off *two parts* 2
using a glass or tin condenser, and throw this first portion away. Then
distil off *thirty-two parts* 32
Preserve it in glass-stoppered bottles.

Char.—Distilled Water is insipid, colorless, and inodorous, and leaves no residue on evaporation. Its transparency or color is not affected by hydrosulphuric acid (absence of metallic salts), chloride of barium (absence of sulphuric acid), nitrate of silver (absence of chlorine), or oxalate of ammonium (absence of lime). Boiled for 5 minutes with a few drops of solution of potassium permanganate (sufficient to impart to it a faint rose tint), and an equal number of drops of sulphuric acid, the tint is not destroyed (absence of organic matter). Distilled Water for pharmaceutical uses is at most only faintly clouded by lime-water (presence of traces of carbonic acid), and by a 2% solution of mercuric chloride followed by a 2% solution of carbonate of potassium (presence of traces of ammonia). Distilled Water for analytical purposes must give no reactions with the two last-named tests.

Aqua Fœniculi. *Fennel Water.*

Take of Oil of Fennel, *one part* 1
Precipitated Phosphate of Calcium, *four parts* . . 4
Distilled Water, *five hundred parts* 500

Rub the Oil, first with the Prec. Phosphate of Calcium, then with the Water, gradually added, and filter through a well-wetted filter.

Or: Mix Fennel, in coarse powder, *three parts* 3
with Water, *forty parts* 40
and distil off *twenty parts* 20

¶ Same strength as at present.

Aqua Menthæ Piperitæ. *Peppermint Water.*

Take of Oil of Peppermint, *one part* 1
Precipitated Phosphate of Calcium, *four parts* . . 4
Distilled Water, *five hundred parts* 500

Rub the Oil, first with the Prec. Phosphate of Calcium, then with the Water, gradually added, and filter through a well-wetted filter.

Or: Mix Peppermint, *three parts* 3
with Water, *forty parts* 40
and distil off *twenty parts* 20

¶ Present strength 1 in 560.

Aqua Menthæ Viridis. *Spearmint Water.*

Take of Oil of Spearmint, *one part* 1
Precipitated Phosphate of Calcium, *four parts* . . 4
Distilled Water, *five hundred parts* 500

Rub the Oil, first with the Prec. Phosphate of Calcium, then with the Water, gradually added, and filter through a well-wetted filter.

Or: Mix Spearmint, *three parts* 3
with Water, *forty parts* 40
and distil off *twenty parts* 20

¶ Present strength 1 in 556.

Aqua Rosæ. *Rose Water.*

Take of Recent Pale Rose, *two parts* 2
Water, *ten parts* 10

Mix them and distil off *five parts* 5

When it is desirable to keep the Rose for some time before distilling, it may be preserved by being well mixed with *half its weight* of chloride of sodium.

¶ Same strength as at present. The *Germ. Pharm. Rep.* adds: As an exception, this water *may* be prepared from the essential oil [the Germ. Pharm. prepares all aromatic waters by distillation] by thoroughly shaking 2 drops of oil of rose with 1 litre of lukewarm water. Or it might be permitted to use the commercial concentrated rose-water, and to dilute it like the commercial Orange Flower Water [1 to 1 of Distilled Water].

Aralia Nudicaulis (*d*).—**Aralia Spinosa** (*d*).

*** Araroba.** *Goa Powder.*

¶ From *Andira Araroba* Aguiar.

Argenti Cyanidum.—Argenti Nitras.—Argenti Nitras Fusa.

*** Argenti Nitras Fusa cum Chlorido.** *Fused Nitrate of Silver with Chloride.*

¶ The small percentage of chloride of silver, about 5%, necessary to impart toughness to sticks or cones of caustic, hardly makes sufficient difference to retain both of the preceding preparations in the pharmacopœia. As the chloride is not a therapeutic constituent, the title "Argenti Nitras Fusa" may be unhesitatingly applied to the variety containing chloride.

Argenti Oxidum.—Argentum.

Arnica. *Arnica.*

¶ The *root* should be made officinal, either in addition to, or in place of the flowers. We would then have: "Arnicæ Flores," "Arnicæ Radix."

Arsenici Iodidum. *Iodide of Arsenic.*

Take of	Iodine, in coarse powder, *four parts*	4
	Arsenious Acid, in fine powder, *one part*	1
	Distilled Water, *fifty parts*	50

Add the Iodine to the Distilled Water contained in a tall glass cylinder, and by means of an appropriate apparatus, pass through it a steady current of hydrosulphuric acid gas, until all the iodine has disappeared. Filter the liquid from the separated sulphur, and boil it to expel the excess of the gas. Then pour it into an evaporating dish, add the Arsenious Acid, and heat until the latter is dissolved. Filter the solution, if necessary, and finally evaporate it to dryness.

¶ This is Mr. Jas. F. Babcock's process, published in the *Proc. Amer. Pharm. Assoc.*, vol. 23, p. 698. The reaction is the following: $As_2O_3+6HI=2AsI_3+3H_2O$.

The product is in orange-red crystalline scales of definite composition, thus having a decided advantage over the present product of the U. S. Ph., and it is capable of combining with its full equivalent of iodide of mercury.

Asafœtida.—Asarum.—Asclepias Incarnata.—Asclepias Syriaca.—Asclepias Tuberosa.—Atropia.—* Atropiæ Salicylas.—Atropiæ Sulphas.—* Attenuationes (see *Elaterinum*).**—Aurantii Amari Cortex.—Aurantii Dulcis Cortex.—Aurantii Flores.—* Aurantii Folia** (?).**—* Auri et Sodii Chloridum** ($AuCl_3.NaCl.2H_2O$).

Avenæ Farina (*d*). *Oatmeal.*

¶ There is hardly any need of making this substance officinal, as it is a common article of food. The same may be said of Tapioca, Sago, Maranta, and Ovum.

Azedarach (*d*).

*** Balsamum Dipterocarpi.** *Gurjun Balsam.*

SYN. *Balsamum Gurjunicum; B. Gurjunæ.* *Wood Oil.*

¶ A balsam obtained by incisions from the trunks of various species of Dipterocarpus.

Balsamum Peruvianum.—Balsamum Tolutanum.

¶ The *Germ. Pharm. Rep.* remarks to the latter: If Balsam of Tolu contains common resin, heating it with sulphuric acid produces vapors of sulphurous acid.

*** Baptisia.—Barii Carbonas.—* Bebeeriæ Sulphas (?)—* Belæ Fructus.—Belladonnæ Folia.—Belladonnæ Radix.**

*** Benzinum.** *Benzin.*

SYN. *Æther Petrolei.* *Petroleum Ether.* *Petroleum Benzin.*

Char.—A colorless, transparent, and highly inflammable liquid, obtained by distillation from American petroleum, and possessing a slight odor of the latter. When poured drop by drop into the palm of the hand, it evaporates rapidly without leaving any odor. It is not miscible with water, but swims on the surface. Its spec. gr. ranges from 0.670 to 0.675, and it boils at a temperature of 50° to 60° C. (=122° to 140° F.). When heated for a few minutes with one-fourth of its volume of spirits of ammonia and a few drops of a solution of nitrate of silver, the ammoniacal liquid should not turn brown (absence of foreign pyrogenous products and of sulphur compounds). It is soluble in not less than 6 times its weight of 90% alcohol (difference from and absence of benzol). On mixing equal parts of fuming nitric acid and benzin in a test-tube, and gently heating, the benzin assumes at most only a faint yellow color (difference from and absence of benzol).

It should be preserved in well-closed vessels, in a cool place, and away from lights or fires.

¶ Should be introduced. To be used in the preparation of Charta Sinapis, Oleoresins, Extr. Lactucarii Fluidum, etc.

Benzoinum.—* Berberinæ Sulphas (or another salt?).**—Berberis.—* Bismuthi Citras.—Bismuthi Subcarbonas.—Bismuthi Subnitras.**

¶ The *Germ. Pharm. Rep.* says: It is preferable to write *Bismutum* without *h*, like Cobaltum, Argentum. Up to the present time it is undecided whether the purification of bismuth from arsenic succeeds better by fusing it with nitrate of potassium and caustic soda, or by the process directed in the *Germ. Pharm.* [see the English translation] under Bismuthum Subnitricum. Should it be preferred to purify the metal itself by fusion, a separate article, "Bismutum purum," should be introduced. But if the method of the *Germ. Pharm.* is to be retained, it is to be improved by directing the precipitation with water to be repeated until the precipitate is free from arsenic. It is also suggested to add that the salt when dried at 120° C. (=248° F.) loses 3–5% of water, and, when ignited, loses 79 to 82% of its weight. The test for arsenic is to be performed by boiling the subnitrate for some time with solution of potassa, free from chlorides, and then introducing into the filtered alkaline solution a few pieces of bright iron-wire and some zinc filings. On warming, if any arsenic was

present, arseniuretted hydrogen is eliminated, which may be detected with paper impregnated with nitrate of silver. (Solution of potassa extracts from the bismuth salt both arsenious and arsenic acids.) Lead is to be detected by sulphuretted hydrogen.

Bismuthum.—* Boldus (?)—Brayera.—Brominium.—* Bryonia.—Buchu.—Cadmii Sulphas.—Caffea.

*** Caffeina.** *Caffeine.*

¶ The alkaloidal powers of this substance are so feeble that it may just as well be denominated like neutral principles, namely "Caffeinum."

Calamus (unpeeled).—* Calcii Bromidum.—Calcii Carbonas Præcipitata.—Calcii Chloridum.—Calcii Hypophosphis.—* Calcii Iodidum.—Calcii Phosphas Præcipitata.—* Calcii Sulphuretum.

¶ It would be preferable to substitute the termination *-idum* for *-uretum* here and in other cases.

*** Calendula.—Calumba.—Calx.—Calx Chlorinata.—Camphora.—* Camphora Monobromata.—Canella.—Canna (*d*).—Cannabis Americana (*d*).—Cannabis Indica.—* Cantharidinum.—Cantharis.—Capsicum.**

*** Carbasus.** *Gauze Muslin.*

¶ This and the following, perhaps, do not properly belong into a pharmacopœia. Nevertheless, the propriety of introducing them deserves argument. The muslin-gauze is to be defined as being of loose texture, having about 30 to 36 threads to the linear inch. The brand "Stillwater" muslin is the best.

***Carbasus Antisepticus.** *Antiseptic Gauze.*

Take of	Resin, in coarse powder, *forty parts*	40
	Castor Oil, *four parts*	4
	Carbolic Acid, *ten parts*	10
	Alcohol ("Strong. Alc."), *one hundred and seventy parts*	170
	Gauze-muslin, *a sufficient quantity*	q. s.

Dissolve the Resin, Castor Oil, and Carbolic Acid in the Alcohol. Then immerse in the mixture folded pieces of gauze-muslin, and allow them to macerate for 15 minutes, or until they are thoroughly saturated. Remove the excess of liquid by strong pressure, spread them out horizontally, and as soon as the alcohol has nearly evaporated, fold them and preserve them in air-tight boxes.

¶ Antiseptic Gauze, prepared by the above method (after Prof. Bruns), is equally effective and much more pliable than that prepared by the original process of Lister.

Carbo Animalis.

Carbo Animalis Purificatus. *Purified Animal Charcoal.*

Take of Animal Charcoal, in fine powder, *one part* 1
Hydrochloric Acid, *one part* 1
Water, *a sufficient quantity* . . . . . q. s.

¶ Directions same as at present.

Carbo Ligni.—* Carbonei Bisulphidum.—Cardamomum.—Carota (*d*).—Carthamns (*d*).—Carum.—Caryophyllus.—Cascarilla.

*** Cassia.** *Cassia Bark. Chinese Cinnamon.*

¶ As it is altogether uncertain whether *Cinnamomum aromaticum* Nees is the source of Chinese Cinnamon, it would be an advantage to choose for this a separate pharmaceutical name. The term Cassia is readily understood. See also *Oleum Cassiæ*.

Cassia Fistula.—Cassia Marilandica.—Castanea.—Castoreum (*d ?*)—Cataria (*d*).

*** Catechu.** *Catechu.*

¶ The *Germ. Pharm. Rep.* says: Gambir Catechu, which occurs in the market of very uniform quality, and consists of unaltered catechin, besides being soluble in 2 parts of boiling water, is better than the Cutch or Catechu from Pegu. At least its use should not be forbidden.—[We have in a former report likewise advocated the substitution of gambir for cutch.]

Cera Alba.—Cera Flava.

¶ The *Germ. Pharm. Rep.* says: To test wax, it is boiled with a cold saturated solution of soda or cold saturated solution of borax. If it is pure, it rises to the top, while the lower aqueous liquid is clear. If the wax was adulterated with stearin, vegetable wax, tallow, or resin it does not separate, but the whole mass is uniformly thick. On heating 50 to 80 parts of fuming sulphuric acid with 1 part of wax, the latter, if pure, is decomposed; any paraffin or ceresin, however, which may be present are separated.

White Wax requires at least 30 to 35 parts of ether, at 15° C., for solution.

Yellow Wax fuses at 63°–64° C.

Ceratum (see **Ceratum Simplex**).

Ceratum Cantharidis. *Cantharides Cerate. Blistering Cerate.*

Take of Yellow Wax, *seven parts* 7
Resin, *seven parts* 7
Lard, *ten parts* 10
Cantharides, in very fine powder, *twelve parts* . . 12

Melt the Wax, Resin, and Lard by a gentle heat, strain the mixture through muslin, add the Cantharides, and keep the mixture in a liquid state for half an hour, stirring occasionally. Then remove it from the water-bath, and stir it constantly until cool.

Ceratum Cetacei. *Spermaceti Cerate.*

Take of	Spermaceti, *one part*	1
	White Wax, *three parts*	3
	Olive Oil, *five parts*	5

Melt the Spermaceti and Wax on a water-bath, then add the Olive Oil, previously heated on the water-bath, and stir the mixture constantly until cool.

Ceratum Extracti Cantharidis. *Cerate of Extract of Cantharides.*

Take of	Cantharides, in fine powder, *five parts*	5
	Acetic Ether, *a sufficient quantity*	q. s.
	Resin, *three parts*	3
	Yellow Wax, *six parts*	6
	Lard, *seven parts*	7

Pack the Cantharides tightly into a conical percolator, and pour Acetic Ether on top, until *thirty parts* 30
of percolate are obtained, or, until the drug is exhausted. Recover the Acetic Ether by distillation on a water-bath, until the residue amounts to about 5 *parts* 5
Then transfer it to a tared porcelain capsule, and evaporate it, until it weighs *two parts* 2
Add to this the Resin, Wax, and Lard, previously melted together, and keep the whole at the temperature of 100°C. (=212°F.) for fifteen minutes. Lastly, strain the mixture through muslin, and stir it constantly until cool.

¶ The stronger alcohol of the present Pharm. is here replaced by Acetic Ether, the latter being a much better menstruum.

Ceratum Plumbi Subacetatis. *Cerate of Subacetate of Lead. Goulard's Cerate.*

Take of	Solution of Subacetate of Lead, *nine parts*	9
	Yellow Wax, *ten parts*	10
	Benzoated Lard, *twenty parts*	20
	Olive Oil, *four parts*	4
	Liniment of Camphor, *one part*	1

Melt the Wax and Lard on a water-bath, and add the Olive Oil and Liniment of Camphor. Remove the vessel, stir the mixture until it begins to thicken, and then add the solution of Subacetate of Lead, stirring constantly with a wooden spatula until the cerate is cold.

¶ The present U. S. Ph. has two alternate processes, which, calculated into parts by weight, are as follows:

I.		II.	
Sol. Subacet. Lead	48	Sol. Subacet. Lead	9
White Wax	64	Cerate	30
Olive Oil	128	Olive Oil	4
Camphor	1	Liniment of Camphor	1
	241		44

There is no necessity of two formulæ. The second is preferable, provided yellow wax and benzoated lard are substituted for the cerate.

Ceratum Resinæ. *Resin Cerate. Basilicon Ointment.*

Take of	Resin, *five parts*	5
	Yellow Wax, *two parts*	2
	Lard, *eight parts*	8

Melt them together on a water-bath, strain the mixture through muslin, and allow it to cool without stirring.

¶ As the *Germ. Pharm. Rep.* observes, the ointment should *not* be stirred, as it will remain perfectly uniform without this. Stirring produces the opposite result.

Ceratum Resinæ Compositum. *Compound Resin Cerate.*

Take of	Resin, *twelve parts*	12
	Suet, *twelve parts*	12
	Yellow Wax, *twelve parts*	12
	Turpentine, *six parts*	6
	Flaxseed Oil, *seven parts*	7

Melt them together on a water-bath, strain the mixture through muslin, and stir it constantly until cool.

¶ Cotton-Seed Oil is preferable to Linseed Oil in this preparation.

Ceratum Sabinæ. *Savin Cerate.*

Take of	Fluid Extract of Savin, *one part*	1
	Resin Cerate, *four parts*	4

Melt the Resin Cerate on a water-bath, add the Fluid Extract of Savin, and continue the heating until the Alcohol has evaporated. Then stir until cool.

¶ Strength as at present. The spec. gr. of Fl. Extr. of Savin is about 0.939, acc. to Mr. E. W. Runyon.

Ceratum Saponis. *Soap Cerate.*

Take of	Soap Plaster, *four parts*	4
	Yellow Wax, *five parts*	5
	Olive Oil, *eight parts*	8

Melt together the Soap Plaster and Wax on a water-bath, add the oil, and after continuing the heat for a few minutes, remove the vessel, and stir the mixture until cool.

Ceratum Simplex. *Simple Cerate.*

SYN. *Ceratum simplex*, 1850.—*Ceratum Adipis*, 1860.—*Ceratum*, 1870.

Take of	White Wax, *one part*	1
	Lard, *two parts*	2

Melt them together on a water-bath, and stir the mixture constantly until cool.

¶ The title of this should be changed back to *Ceratum Simplex.*

Ceratum Zinci Carbonatis. *Cerate of Carbonate of Zinc.*

Take of	Precipitated Carbonate of Zinc, *two parts*	2
	Simple Cerate, *ten parts*	10

Mix them thoroughly.

Cerii Oxalas.—* Cerii Nitras.

Cetaceum. *Spermaceti.*

¶ The *Germ. Pharm. Rep.* says: Melts at 50-54° C. It should not be colored, and should be soluble in 10 parts of boiling alcohol, spec. gr. 0.810. The solution should not redden blue litmus-paper (absence of stearic acid). After allowing the solution to cool and filtering, the filtrate is rendered only cloudy by the addition of water, without the appearance of a precipitate (absence of stearic acid).

Cetraria.

Charta Cantharidis. *Cantharides Paper. Blistering Paper.*

Take of	White Wax, *eight parts*	8
	Spermaceti, *three parts*	3
	Olive Oil, *four parts*	4
	Canada Turpentine, *one part*	1
	Cantharides, in moderately fine powder, *one part* . .	1
	Water, *ten parts*	10

Mix all the substances in a tinned vessel, and boil gently for two hours, constantly stirring. Strain through a woolen strainer without expressing, and keep the mixture in a liquid state by means of a water-bath in a shallow, flat-bottomed vessel with an extended surface. Coat strips of sized paper, on one side only, with the melted plaster, by passing them successively over the surface of the liquid, and cut the strips when dry into rectangular pieces.

Charta Sinapis. *Mustard Paper.*

Take of	Black Mustard, in fine powder, *one part*	1
	Benzin, *three parts*	3
	or *a sufficient quantity*	
	Solution of Gutta Percha, *a sufficient quantity* . .	q. s.

Pack the Black Mustard tightly in a conical percolator, and pour upon it the Benzin until the percolate ceases to produce a permanent greasy stain upon blotting paper. Remove the exhausted Mustard from the percolator, and dry it by exposure to the air. Then mix the Mustard with so much of the solution of Gutta Percha as may be necessary to give it a semi-liquid

consistence, and apply the mixture, by means of a suitable brush, to pieces of rather stiff, well-sized paper, four inches square, so as to completely cover one side of it, and allow the surface to dry.

Each square of paper should contain about 6 grammes (=90 grains) of Mustard.

Before being applied to the skin, let the Mustard Paper be dipped for about 15 seconds in warm water.

Chenopodium.—Chimaphila.—* Chinoidinum.—* Chiretta (better *Chirata*).

Chloral. (*Hydrate of*) *Chloral.*

¶ The *Germ. Pharm. Rep.* adds: Dry, transparent, colorless crystals of distinct rhomboidic shape. On dissolving chloral (hydrate) in 5 parts of alcohol, spec. gr. 0.880, the solution should not redden blue litmus paper moistened with water. Melted chloral (hydrate) solidifies at 46° C. (=115° F.).

*** Chloral Butylicum** (SYN. *Croton-Chloral*).

Chloroformum Purificatum. *Purified Chloroform.*

Take of	Commercial Chloroform, *two hundred parts*	200
	Sulphuric Acid, *forty parts*	40
	Alcohol ("Strong. Alc."), *two parts*	2
	Carbonate of Sodium, *ten parts*	10
	Lime, in coarse powder, *one part*	1
	Water, *nineteen parts*	19

Add the Acid to the Chloroform, and shake them together occasionally during twenty-four hours. Separate the lighter liquid, and add to it the Carbonate of Sodium, previously dissolved in the Water; agitate the mixture thoroughly for half an hour, and set it aside; then separate the Chloroform from the supernatant layer, mix it with the Alcohol, transfer it into a dry retort, and having added the Lime, distil by means of a water-bath into a well-cooled receiver, taking care that the temperature in the retort does not rise above 67.2° C. (or 153° F.) until the residue in the retort amounts to *one part* 1

Keep the distilled liquid in glass-stoppered bottles.

¶ The text of the present U. S. Ph. reads: ". . . Then separate the Chloroform from the supernatant layer, and mix it with the Alcohol. When the mixture has separated into *two transparent layers*, transfer the Chloroform into a dry retort. . . ." This is evidently an oversight, and should be corrected, as above.

Chloroformum Venale.—Chondrus.—Cimicifuga.—Cinchona.—Cinchona Flava.—Cinchona Pallida.—Cinchona Rubra.

Report on Pharmacopœial Assay Methods for Cinchona Barks and Tests for Cinchona Alkaloids.

(BY PROF. ALB. B. PRESCOTT.)

Present evidences indicate that the most important requirements for all cinchona barks is that of percentage of total alkaloids. The restriction of our

present pharmacopœia, that the "two per cent of alkaloids" shall be those "which yield crystallizable salts," will undoubtedly receive the attention of the Committee of Revision. If it is required that the total alkaloids shall be those which form crystallizable salts, an assay method should be provided to secure this requirement. The exclusion of amorphous alkaloids imposes much additional difficulty in providing an assay process suitable for general use. At present, I suggest assay methods for only two requirements: that of percentage of total cinchona alkaloids, and that of quinia equivalent to percentage of its crystallized sulphate. I presume the valuation of red barks will be based, as now, on percentage of the entire alkaloids (crystallizable or otherwise). Yellow bark may have only a required percentage of quinia; or it may be required to have a certain percentage of quinia, and also a certain percentage of total alkaloids. If anything is required of the pale barks, it will be, of course, total alkaloids.†

A required yield of 2 per cent of quinia sulphate (7½ *aq.*) is equivalent to requirement of 1.72 per cent of quinia (3 *aq.*); and a yield of 2 per cent of the latter is represented by 2.33 per cent of the crystallized sulphate. But 2 per cent of quinia, as dried on the water-bath, and containing about 4.28 per cent of water, are equivalent to about 2.6 per cent of crystallized sulphate (with 7½ *aq.*).

I propose, first, De Vrij's method for finding the total alkaloids.‡ I consider this a very direct and expedient process, but open to one objection: the waste of precipitated alkaloids in their water washing. "The least sufficient quantity of water" should still be enough to wash away all the sodium sulphate, and if the sodium sulphate is all removed, there is a serious loss of quinia, as the writer has verified.§ The other alkaloids, also, are wasted, but their solubilities have been less closely determined. To leave behind some foreign matter by imperfect washing, and thus compensate for loss of alkaloids, is mere guess-work. There seems to be no prospect of finding a coefficient of solubility for correction in the case of the mixed alkaloids. It is chiefly to avoid this washing of precipitated alkaloids that I propose an alternative method, one with the separation of all the alkaloids, from the acidulated water solution, by repeated extraction with chloroform after liberating the alkaloids with an alkali. I have used like methods, becoming now familiar to all analysts, for many estimations of alkaloids. The British Pharmacopœia extracts the dry residue with chloroform, in case of red bark, and with ether for quinia separation in case of yellow bark. The complete removal of alkaloids by chloroform in valuation of scale preparations has been attested by Mr.

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† The pharmacopœial percentages of alkaloids in barks are and have been comparatively low. Ours, of 2%, total crystallizable, alike for yellow and red barks, is certainly below a fair average quality. Red barks average a higher percentage of total alkaloids than yellow barks. Yet the Br. Ph. provides that yellow bark shall contain 2 per cent of quinia (ether soluble); and red bark, 1½ per cent of total alkaloids (chloroform soluble).

‡ J. E. De Vrij: Phar. Jour. and Trans. [3], iv., 241, Sept. 27th, 1873. Pro. Am. Pharm. Asso., 1874, xxii., 268. Attfield's Chemistry, Am. Ed. of 1879, 601.

§ Am. Jour. Pharm., xlix., 481, Oct., 1877.

Palmer.† However, I have not made such trial of this chloroform extraction process as can warrant me now in recommending its adoption for the pharmacopœia. If time permits, I will subject it to trial in comparison with De Vrij's process, examining the amount and purity of the yield by each method; and I offer it in the desire that others may try it, and report as to its merits.

For general use, the exhaustion of the bark by DeVrij's method seems to me sufficient. For the analyst in much practice, a more satisfactory exhaustion of the bark, in mixture with lime, is by continuous percolation with warm chloroform, on the plan of Tollens and others.‡

Estimation of Total Alkaloids.—De Vrij's Process.

Of the bark, in fine powder, and dried at 100° C., mix 20 grams with milk of lime, made from 5 grams of lime and 50 grams of water, and by a very gentle heat thoroughly dry the mixture. Heat it, in a flask, with 200 cubic centimetres of stronger alcohol to boiling. When cool, pour on a filter of about 15 centimetres' diameter. Rinse the flask and wash the filter with 200 cubic centimetres of the alcohol, used in several portions, letting the filter drain after each portion. Slightly acidulate the liquid with dilute sulphuric acid, letting any resulting precipitate subside; decant upon a very small filter, and wash this with a little alcohol. Distil or evaporate the filtrate to expel all the alcohol, cool, and pass through a small filter, washing with water slightly acidulated with sulphuric acid, until the washings are not made turbid by solution of soda. [a] The filtrate is now concentrated, and while still warm, precipitated by a decided excess of solution of soda. If the alkaloids melt, the mixture must be cooled, and the precipitate pulverized. The precipitate is now collected on a filter, washed with the least sufficient quantity of water, and drained. The moist filter is laid upon successive pieces of blotting paper until nearly dry, the precipitate carefully detached from the paper, and dried in a weighed capsule on the water-bath till it ceases to lose weight. The grams of the dried precipitate multiplied by 5 give the percentage of total alkaloids in the bark.

Modification of De Vrij's Process.—Proposed for Trial.

Proceed as stated above in De Vrij's process to [a], and then continue as follows: Concentrate the filtrate to the volume of 50 cubic centimetres or less. Transfer, rinsing with a little water, to a glass separator of 100 to 150 cubic centimetres' capacity (a cylindrical vessel fitted with a cork at the upper end, and drawn out and closed with a stop-cock or flexible tube and pinch-cock at the lower end). Add solution of soda in decided excess; then at once add 30 to 40 cubic centimetres of water-washed chloroform, stopper, agitate for a few minutes, set aside for an hour or two, and draw off the clear chloroform layer. In the same way, extract with three smaller portions of the chloroform, using in all 120 to 130 cubic centimetres of this solvent. The

† Pharm. Jour. and Trans. [3], vii., 89, July 29th, 1876; Pro. Am. Phar. Asso., 1877, xxv., 302.

‡ B. Tollens: Zeitschrift für analyt. Chemie, xvii. (1878), 321. H. B. Parsons: New Remedies, viii. (1879, Oct.), 293. Carles: Am. Jour. Pharm., xlv., 27 (Jan., 1873).

chloroform is then recovered by distillation, or is slowly evaporated, the concentrated liquid is transferred, with chloroform rinsing, to a weighed dish, and the residue dried on the water-bath to a constant weight. The grams multiplied by 5 express the percentage of total alkaloids in the bark.

I have left the usual direction, to evaporate the total alkaloids at water-bath temperature to constant weight as the best practical for general use. With quinia, this leaves a slightly variable proportion of water, not far from that of 1 molecule. Quinidia retains 2 molecules of water on the water-bath. Cinchonidia and cinchonia do not hold water of crystallization. The temperature of 120° C. leaves the four alkaloids anhydrous and without loss.

For the *separation of quinia from the mixed alkaloids*, solubility in ether has long been the chief dependence. Unless controlled by other work, the separation by ether is not close enough. Ether dissolves different proportions of quinidia, cinchonidia, and cinchonia; the proportions being varied by the quantity of quinia present. I had much expectation of being able to separate quinia with cinchonidia from quinidia and cinchonia, by treating the sulphates with chloroform; but trial showed that the presence of the last-named pair of alkaloids decidedly increases the solubility of the two first-named.† The separation of quinia (from that part of the alkaloids soluble in ether) by De Vrij's herapathite method, guarded by washing the crystals with chinoidine herapathite saturated solution, and indirect determination of the chinoidine herapathite left after drying,‡ is worthy of all respect. But I presume it is not adapted to pharmacopœial use.

The method I venture to propose is simple enough: Separation of quinia, as sulphate, by water. This separation is one of the features of Kerner's test, adopted in the German Pharmacopœia, and in growing favor.§ To be sure, there must be a correction for the quinia sulphate dissolved. If some experiments I have undertaken‖ are not at fault, the water solubility of quinia sulphate is not materially affected by presence of the other alkaloid sulphates, and is pretty nearly constant, in fixed conditions of temperature, time, and neutral reaction upon test-paper. I put in, provisionally, the correction for solubility deduced from the few experiments just referred to, six in number. This is 0.00085 gram of effloresced sulphate of quinia (2 *aq.*) for each cc. of water used. Of crystallized sulphate (7½ *aq.*), the corresponding amount is 0.00095 gram. A solution *saturated* at 15° C. should contain, of crystallized sulphate, according to Kerner, 0.00132 gram to the cc., and other authorities do not vary much from this. I expect to be able to report an average of a

† Report of Mr. Thum and the writer: Pro. Am. Phar. Asso., 1878, xxvi., 834.

‡ De Vrij: Phar. Jour. and Trans. [3], vi., 461 (Dec. 11th, 1875); Pro. Am. Phar. Asso., 1876, xxiv., 348; Am. Jour. Phar. (1876, Mar.), xlviii., 126; Attfield's Chem., Am. Ed., 1879, p. 604.

§ Kerner's original report is in Zeitschrift für analyt. Chemie, i., 150 (1862); translated in Phar. Jour. and Trans. [2], iv., 19 (July, 1862); and given entire in Am. Jour. Phar., xxxiv., 417 (Sep., 1862). The author's dependence is more upon separation by ammonia, in the filtrate, than upon the prior separation by water with the sulphates. But experience has not confirmed the accuracy of separation by ammonia. Hesse, Paul, and others, adopt separation by water, though not as a sole dependence.

‖ Pro. Am. Phar. Asso., 1878, xxvi., 836.

greater number of determinations, of the co-efficient of solubility. Any worker interested, is invited to prove the accuracy of the method, and find the correction to be made for solubility. This may be done by comparison with De Vrij's herapathite method, in work upon bark ; or by extracting the filtrate with ether, with previous addition of alkali, and then separating the quinia from the ether residue, as herapathite, or by crystallization as sulphate ; and it may be done in other ways, chosen by the operator. I may remark that the total alkaloids can be obtained from sulphate filtrates without loss, by adding sodium carbonate in slight excess, evaporating to strict dryness, and extracting with absolute alcohol.

Carles has preferred the use of ammonium hydrate, to neutralize the quinia sulphate, with the statement that ammonium sulphate solution dissolves less quinina sulphate than pure water does.† Mr. Thum and myself obtained such low results with Carles' process,‡ that I was not encouraged for the use of ammonia. However, I should like to have a comparative trial made with ammonia and soda. There is very little sodium sulphate formed in a faithful execution of this scheme.

The following then is the process proposed, and which I may desire to change in some particulars :

Estimation of Quinia in Total Alkaloids.

Treat the total alkaloids of 20 grams of bark with distilled water, slightly acidulated with dilute sulphuric acid, till the mixture is just perceptibly acid. Add distilled water to make 70 parts for each part of alkaloids taken. Make the mixture nearly neutral, but just perceptibly acid to litmus paper ; if necessary, adding drops of very dilute solution of soda. Digest the mixture at 82° to 85° C. for five minutes ; then cool, and leave at the temperature of 15° C. for an hour. Filter through a small double filter, not over 7 centimetres (2¾ inches) diameter, the two filters being previously trimmed to equal weight, and receive the filtrate in a graduated vessel. Wash with distilled water until the total washings make 90 parts for each part of the alkaloids taken. During the filtration and washing, the last-mentioned temperature should be maintained. The filter and contents are now completely dried at 50° to 60° C., cooled and weighed, counterpoising with the outer filter. To the weight, in grams, add 0.00085 gram for each cubic centimetre of the entire filtrate ; add 12 per cent of this sum (for crystallization water) ; multiply by 5 to represent 100 grams of the bark, and the product is the percentage of sulphate of quinia (crystallized) equivalent to the quinia in the bark.§

* **Cinchonia** (see **Pulv. Cinchoniæ Co.**).

Cinchoniæ Sulphas.

† P. CARLES: Am. Jour. Phar., xlv., 27 (Jan., 1873); Chem. News, xxvi., 219 (Nov. 8th, 1872); from Bull. Soc. Chim.

‡ Pro. Am. Phar. Asso., 1878, xxvi., 837. The recovery of quinia sulphate in three trials was, respectively, 62.66 and 60 per cent of the full amount.

§ The tests for the single alkaloids will be found under the headings of their sulphates.

Test of Sulphate of Cinchonia.

(By Prof. Albert B. Prescott.)

When dissolved in 100 parts of water, at a boiling temperature, and cooled, the solution does not yield crystals (absence of quinia), and does not show decided fluorescence after acidulation with sulphuric acid (absence of quinia and quinidia). Slight fluorescence may be due to presence of cinchonidia.

When the dried salt is agitated with 70 times its weight of water-washed chloroform at 15° C., any undissolved residue may consist of quinia or cinchonidia sulphate.

*Cinchonidiæ Sulphas.

The Test of Sulphate of Cinchonidia.

(By Prof. Albert B. Prescott.)

The precipitation of cinchonidia by potassium sodium tartrate solution, testing the filtrate with ammonia,† constitutes the best single test for general use. The following are Hesse's directions: Digest 0.5 gram of the sulphate of cinchonidia with 20 cc. of water at about 60° C., and add 1.5 grams of tartrate of potassium and sodium. After an hour, filter, and add a drop of ammonia water, when no turbidity should appear.

Hager, in his "Praxis," uses smaller quantities, colder water, and a much larger proportion of both water and ammonia, making the test less severe, and, I think, for medicinal demands to be preferred: Agitate 0.100 gram of the salt with 0.300 gram of tartrate of potassium and sodium, and 20 cc. of cold distilled water. After an hour, with frequent agitation, filter, and add to the filtrate a few drops of water of ammonia, when there should be not more than a slight turbidity.

If there is a precipitate by the ammonia, it may be either of quinidia or of cinchonia, and may contain quinia, soluble by excess of ammonia. To exclude quinidia, add iodide of potassium, in quantity equal to that of the cinchonidia sulphate, after the addition of the tartrate, and proceed as above, when a turbidity, caused by ammonia, must be due to cinchonia.‡

The precipitate washed and dried contains 0.8084 of its weight of cinchonidia. It may, however, contain quinia, which is not separated by the tartate test. To distinguish the salt from quinia sulphate, it may well be stated that, when cinchonidia sulphate is dissolved in 120 parts of boiling water and cooled again, the solution does not crystallize, and shows but slight fluorescence on acidulation with sulphuric acid.

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† Hesse: Liebig's Annalen der Chemie, Vol. 176, p. 325 (1875); Zeitsch. f. anal. Chemie, xv., 464 (1876); Hager's Pharm. Praxis (1878), II., 1334.

‡ The precipitates of cinchonidia tartrate and quinidia hydriodate require for each between 1,200 and 1,300 parts of water for solution.

Cinnamomum.

¶ Proposed to denote hereafter only the Ceylon variety.

Coccus.

*** Codeia.**

¶ The *Germ. Pharm. Rep.* has the following: Handsome crystals belonging to the rhombic system, sometimes forming octoheders. Anhydrous codeia fuses at 150° C., and on cooling congeals to a crystalline mass. In water kept at a full boil, codeia softens and forms clear drops, which partly float on the surface and solidify on slow cooling to larger crystals. It is soluble at 15° C. in 80 parts of water; at 100° C., in 17 parts. Dilute alkalies do not render a solution of codeia saturated at 15° C. turbid. Ether and alcohol dissolve the hydrated alkaloid abundantly: "benzin" and petroleum-ether dissolve it but sparingly. It differs from morphia in not altering a solution of iodic acid, or a mixture of chloride of iron and ferricyanide of potassium. In cold, pure, concentrated sulphuric acid, codeia dissolves to a colorless solution; on warming this turns green. If the sulphuric acid contains traces of iron, the cold solution assumes a fine blue color, turning violet or red on warming.

Colchici Radix.—Colchici Semen.

Collodium. *Collodion.*

Take of	Soluble Gun-Cotton (Pyroxylon) *four parts* . . .	4
	Stronger Ether, *seventy parts*	70
	Alcohol ("Stronger Alc."), *twenty-six parts* . . .	26

Moisten the Gun-Cotton, contained in a suitable flask, with a portion of the alcohol; mix the remainder of the Alcohol with the Ether, pour the liquid upon the Gun-Cotton, and agitate occasionally until dissolved.

Char.—Collodion is a slightly opalescent, syrupy liquid, which, on standing, deposits a layer of fibrous matter, and becomes more transparent. This layer should be rejected. When applied, it should form a colorless, transparent, and strongly contractile film. It should be preserved in cork-stoppered bottles.

¶ If the deposited fibrous layer is to be reincorporated by shaking, the film will not be transparent but opaque, and often whitish.

The above proportions have been chosen after comparing the films resulting from a large number of collodions, made with varying percentages of gun-cotton and menstrua. It is strongly contractile, dries rapidly, and forms a tough skin.

The present proportions, in parts by weight, are: Pyroxylin, 3.57; Strong. Ether, 73.21; Strong. Alcohol, 23.21 parts.

The *Germ. Pharm. Rep.* directs 1 part of the Gun-Cotton, prepared according to their formula, to be thoroughly mixed with 16 parts of *absolute* alcohol, and the solution to be effected by the addition of 16 parts of ether.

Collodium cum Cantharide. *Cantharidal Collodion. Blistering Collodion.*

Take of	Cantharides, in fine powder, *four parts*	4
	Acetic Ether, *a sufficient quantity*	q. s.
	Flexible Collodion, *seven parts*	7

Pack the Cantharides tightly in a conical percolator, and pour Acetic Ether on top, until *twenty parts* 20
of percolate are obtained, or, until the drug is exhausted. Recover the Acetic Ether from the percolate by distillation in a water-bath, until the residue amounts to about *four parts* 4
Evaporate this in a capsule, on the water-bath, until it weighs *one part* 1
Then dissolve it in the Flexible Collodion, allow it to stand at rest for 48 hours, and pour off the clear portion from the small sediment which has been deposited.

¶ Acetic Ether is a much better menstruum for Cantharides than ordinary Ether or Alcohol. The above formula yields a good and very effective blistering liquid. By standing it deposits a small quantity of extractive matter, which has no blistering qualities. This may be gotten rid off by allowing the Collodion to stand at rest for 48 hours, or longer, and pouring off the clear portion, which can be removed without disturbing the sediment.

The present formula, in parts by weight, would be: Cantharides 192, percolate with Ether until 251 are obtained; then percolate with Alcohol until 136 more have passed, reduce this by evaporation to 21, and add these to the first 251, making 272. Then add Pyroxylin, 5; Canada Turpentine, 16; and Castor Oil, 8; making the whole product 301 parts.

Collodium Flexile. *Flexible Collodion.*

Take of Collodion, *thirty-six parts* 36
Canada Turpentine, *two parts* 2
Castor Oil, *one part* 1

Mix them, and keep the mixture in a cork-stoppered bottle.

¶ Same strength as at present.

*** Collodium [Olei] Tiglii.** *Croton Oil Collodion.*

Take of Croton Oil, *one part* 1
Flexible Collodion, *one part* 1

Mix them.

¶ Has been recommended as a safe method of producing the peculiar vesication of croton oil.

*** Colloxylon** (see *Pyroxylon*).—**Colocynthis.**

Confectio Aromatica. *Aromatic Confection.*

Take of Aromatic Powder, *one part* 1
Clarified Honey, *one part* 1

Rub the Aromatic Powder with the Clarified Honey until they are thoroughly incorporated.

It should be prepared only when wanted, as it is apt to become dry and brittle by age.

Confectio Aurantii. *Confection of Orange Peel.*

Take of Sweet Orange Peel, freshly separated from the fruit by grating, *one part* 1
Sugar, *three parts* 3

Beat the Orange Peel with the Sugar, gradually added, until they are thoroughly mixed.

¶ There is no necessity of naming this Conf. Aur. *Corticis.*

Confectio Opii. *Confection of Opium.*

Take of Opium, in fine powder, *one part* 1
Aromatic Powder, *ten parts* 10
Clarified Honey, *twenty-five parts* 25

Rub the Opium with the Aromatic Powder, then add the Honey, and beat the whole together until thoroughly mixed.

¶ The former strength was 1 grain Opium in 37.55 . . . grains. This was changed to 1 in 36, as being more easily divisible.

Confectio Rosæ. *Confection of Rose.*

Take of Red Rose, in fine powder, *two parts* 2
Sugar, in fine powder, *fifteen parts* 15
Clarified Honey, *three parts* 3
Rose Water, *four parts* 4

Rub the Red Rose with the Rose Water heated to 65° C. (or 150° F.); then gradually add the Sugar and Honey, and beat the whole together until thoroughly mixed.

The product should weigh *twenty-four parts* 24

Confectio Sennæ (*a*). *Confection of Senna.*

Take of Purging Cassia, finely bruised, *fifteen parts* 15
Tamarind, *ten parts* 10
Prune, sliced, *ten parts* 10
Fig, bruised, *ten parts* 10
Sugar, in coarse powder, *thirty parts* 30
Senna, in fine powder, *ten parts* 10
Coriander, in fine powder, *five parts* 5
Water, *a sufficient quantity* . . . . . q. s.

Digest the Purging Cassia, Tamarind, Prune, and Fig for three hours in a close vessel, on the water-bath, with
Water, *forty-five parts* 45
Separate the coarser portions with the hand, and rub the pulpy mass, first through a coarse hair sieve, and then through a fine one, or through a muslin cloth. Mix the residue with

Water, *fifteen parts* 15
and having digested the mixture for a short time, treat it as before, and add the product to the pulpy liquid first obtained. Then, by means of a water-bath, dissolve the Sugar in the pulpy liquid, and evaporate the whole until it weighs *eighty-five parts* 85
Lastly, add the Senna and Coriander, and incorporate them thoroughly with the other ingredients while yet warm.

The product should weigh *one hundred parts* 100

N. B. This is the formula as recommended by the Committee. Another, but less perspicuous way of writing it is given below. These two methods afford a chance of deciding, whether it is best to construct working formulæ by the one or the other: that is to say, whether it is best to first mention all the constituents entering into a preparation, and then let the formula follow; or, whether each constituent should only be mentioned in the formula itself, wherever it may occur.

Confectio Sennæ (*b*). *Confection of Senna.*

Take of Purging Cassia, finely bruised, *fifteen parts* . . . 15
Tamarind, *ten parts* 10
Prune, sliced, *ten parts* 10
Fig, bruised, *ten parts* 10

Digest them for three hours in a close vessel, on a water-bath, with
Water, *forty-five parts* 45
Separate the coarser portions with the hand, and rub the pulpy mass, first through a coarse hair sieve, and then through a fine one, or through a muslin cloth. Mix the residue with
Water, *fifteen parts* 15
and having digested the mixture for a short time, treat it as before, and add the product to the pulpy liquid first obtained. Then by means of a water-bath dissolve in the pulpy liquid
Sugar, in coarse powder, *thirty parts* 30
and evaporate the whole until it weighs *eighty-five parts* . . . 85
Lastly, add
Senna, in fine powder, *ten parts* 10
Coriander, in fine powder, *five parts* 5
and incorporate them thoroughly with the other ingredients while yet warm.

The product should weigh *one hundred parts* 100

¶ The proportions of the present U. S. Ph. are: Purg. Cassia, 16.6; Tamarind, 10.4; Prune, 7.8; Fig, 12.4; Sugar, 31.26; Senna, 8.33; Coriander, 4.16 per cent. These proportions have been followed in the above formula as nearly as possible, But, in the opinion of Mr. B. F. McIntyre and others, the proportion of sugar should be not less than 50 per cent in the finished product.

*** Coniæ Hydrobromas.—Conii Folia.—Copaiba.—Coptis** (*d*).**—Coriandrum.—Cornus Circinata.—Cornus Florida.—Cornus Sericea.**

***Corydalis.** *Turkey Corn.*

¶ The root of *Corydalis formosa* Pursh. = *Dicentra canadensis* DC. and *Dicentra eximia* DC.—Used as an ingredient in *Syrupus Stillingiæ Co.*

***Cotoinum.**

¶ *Germ. Pharm. Rep.:* A reddish-yellow, fine powder of a peculiar odor inciting to sneezing, and of a strongly pungent taste. It is with difficulty soluble in water, easily in alcohol; in ether it melts. On warming it with concentrated sulphuric acid, it gives a blood-red solution. Dissolved in alcohol and mixed with some ferric chloride, it produces a dark-violet solution (*Jobst*).

Cotula (*d*).

Creasotum. *Creasote.*

¶ The *Germ. Pharm. Rep.* says: Soluble in 120–150 parts of hot water. The solution becomes turbid on cooling, but clears up afterwards with separation of drops of creasote. In a freshly prepared, clear, aqueous solution, a drop of dilute solution of ferric chloride produces a blue color, which, however, at once turns to gray, and, on addition of alcohol, to green. 20 parts of creasote shaken with 1 part of ferric chloride solution assume a darker color, which, on addition of 10 parts of alcohol, becomes yellowish-green, and gradually passes into brown (*Flückiger*). 1 part of creasote mixed with 1 part of collodium gives a clear mixture; carbolic acid, if present, would coagulate the nitrocellulose (*Schneider*).

Creta.—Creta Præparata.—Crocus.—Cubeba.—Cupri Subacetas.—Cupri Sulphas.—Cuprum.—Cuprum Ammoniatum.—Curcuma.—Cydonium (*d*).**—Cypripedium.**

Decocta. *Decoctions.*

Decoctions, the strength of which is not specified by the physician, nor directed by the Pharmacopœia, are to be prepared by the following formula:

Take of The Substance, in a moderately coarse condition, *one part* 1

Put it into a suitable vessel, provided with cover, pour upon it Cold Water, *ten parts* 10

then heat it in a steam bath for half an hour, allow it to cool to about 45° C. (or 113° F.), strain, and pass enough water through the strainer to obtain *ten parts* 10

Caution.—The strength of decoctions of energetic or powerful substances should be specially prescribed by the physician.

¶ The general directions above given make it unnecessary to encumber the Pharmacopœia with many formulæ for decoctions.

Of those which are now officinal

THE FOLLOWING HAVE BEEN OMITTED:	THE FOLLOWING ARE RETAINED:
Decoct. Chimaphilæ	Decoct. Cetrariæ
" Cinchonæ flavæ	" Hæmatoxyli
" " rubræ	" Hordei
" Cornus floridæ	" Sarsap. Comp.
" Dulcamaræ	
" Quercus albæ	
" Senegæ	
" Uvæ Ursi	

Decoctum Cetrariæ. *Decoction of Iceland Moss.*

Take of	Iceland Moss, *one part*	1
	Water, *a sufficient quantity*	q. s.

Cover the Iceland Moss, in a suitable vessel, with Cold Water, *eight parts* 8
express after half an hour, and throw away the liquid. Then boil the Moss with Water, *twenty parts* 20
for half an hour, strain, and add enough water through the strainer to obtain *twenty parts* 20

¶ This formula is improved by directing the Moss to be first washed with cold water. The strength of the formula of the present U. S. Ph. is about 1 in 32. The above strength (1 in 20) is the same as that adopted by the Br. Ph.

Decoctum Hæmatoxyli. *Decoction of Logwood.*

Take of	Logwood, rasped, *one part*	1
	Water, *thirty parts*	30

Boil down to *fifteen parts* 15
and strain.

Decoctum Hordei. *Decoction of Barley.*

Take of	Barley, *one part*	1
	Water, *a sufficient quantity*	q. s.

Wash the Barley with cold Water, to remove extraneous matters, then boil it with Water, *four parts* 4
for five minutes, and throw away the liquid.
Then, having poured on it
Boiling Water, *thirty parts* 30
boil down to *fifteen parts* 15
and strain.

¶ Same strength as at present. The time for first boiling should not exceed 5 minutes.

Decoctum Sarsaparillæ Compositum. *Compound Decoction of Sarsaparilla.*

Take of	Sarsaparilla, cut and bruised, *twelve parts*	12
	Sassafras, in coarse powder, *two parts*	2
	Guaiacum Wood, rasped, *two parts*	2
	Liquorice Root, bruised, *two parts*	2
	Mezereon, cut and bruised, *one part*	1
	Water, *a sufficient quantity*	q. s.

Boil the Sarsaparilla and Guaiacum Wood for half an hour in a suitable vessel with Water, *one hundred and twenty parts* 120
then add the Sassafras, Liquorice, and Mezereon, cover the vessel well and

macerate for two hours, finally strain, and add enough Water through the strainer to obtain *one hundred and twenty parts* 120

The present proportions are :			Approximations.	
Sarsaparilla . . .	6 ℥	48 ʒ	48 ʒ	12
Sassafrass	1 ℥	8 ʒ	8 ʒ	2
Guaiac	1 ℥	8 ʒ	8 ʒ	2
Liquorice	1 ℥	8 ʒ	8 ʒ	2
Mezereon	8 ʒ	8 ʒ	4 ʒ	1
Water	4 pints	60 ℥	480 ʒ	120

The new formula above given contains a trifle more of Mezereum. This is one of the most important constituents, and should *not* be boiled with the Sarsaparilla. Prof. Maisch already drew attention to the defects in the formula ; and the above modification of the process is believed to furnish a satisfactory product. It works well in practice.

Delphinium.—* Dextrinum.

Digitalinum. *Digitalin.*

¶ The product obtained by the officinal process is a complex substance, and does not deserve to be retained in the pharmacopœia. The most active and powerful of all the principles so far discovered in digitalis is the *digitoxin* of Schmiedeberg (see *Pharmacographia* [2], p. 470) ; but the probability is that all the constituents of digitalis *combined* produce the specific effect of the drug, and that no single one can represent digitalis itself completely.

Digitalis.—Diospyros (*d*).—Dracontium (*d*).—Dulcamara.—Elaterium.

*** Elaterinum.** *Elaterin.*

¶ Owing to the acknowledged gradual deterioration of commercial elaterium, the proximate principle *elaterin* should be introduced. Yet the great similarity in name between elaterin and elaterium, makes it doubtful whether both substances should be officinal at the same time. One remedy would be to avoid the use of *elaterin* as such in any prescription, and to introduce a new class of preparations of very general usefulness, particularly in the case of powerful remedies, which are prescribed in very small quantities, so as to be exactly weighed only with difficulty, namely : *Attenuationes* or *Triturationes* to be prepared by triturating *one part* of the substance with *nine parts* of sugar of milk, and to dispense *only* these dilutions when the substance is prescribed. Of course, the prescriber should write for : *Attenuatio Elaterini*, or *Trituratio Elaterini*, or *Lactosum Elaterini*, or *Pulvis Elaterini dilutus*, or whatever term might be agreed upon to denote these preparations. Saccharated pepsin would naturally also come under this class of preparations.

*** Elixir Cinchonæ.** *Elixir of Cinchona.*

Take of Yellow Cinchona (Calisaya), in moderately fine powder, *one hundred parts* 100
Hydrochloric Acid, *seven parts* 7
Caustic Lime, *ten parts* 10
Alcohol ("Strong. Alcohol"), *a sufficient quantity* . . q. s.
Oil of Orange, *five parts* 5
Oil of Ceylon Cinnamon, *two parts* 2
Precipitated Phosphate of Calcium, *thirty parts* . . 30

Sugar, *one thousand parts* 1000
Water, *a sufficient quantity* . . . . . q. s.
Distilled Water, *a sufficient quantity* . . . . . q. s.

Boil the Cinchona in Water, *four hundred parts* . . . . . 400 mixed with *one-third* of the Hydrochloric Acid, and strain through muslin. Boil the residue twice successively with the *same quantity* of Water and Acid as before, and strain. Mix the decoctions, and while the liquid is hot, gradually add the Lime, previously made into a smooth milk with Water, *seventy parts* . . . . . 70 stirring constantly, so that the alkaloids may be completely precipitated. Wash the precipitate with cold Water, and having pressed, dried, and powdered it, digest it with boiling Alcohol, *forty parts* . . . . . 40 Pour off the liquid, and repeat this digestion several times until the Alcohol ceases to acquire a bitter taste. Mix the alcoholic liquids, and bring them to the weight of *two hundred and sixty parts* . . . . . 260 either by distilling off the excess, or by the addition of *a sufficient quantity* of Alcohol. Then add the Oil of Orange and Oil of Cinnamon. Dissolve the sugar in Distilled Water, *sixteen hundred parts* . . . . . 1600 Add the latter solution gradually, and in small portions at a time, to the alcoholic solution of the alkaloids and oils, constantly stirring until a permanent milkiness makes its appearance. Then reverse the proceeding by gradually pouring the mixture into the remainder of the Syrup under constant stirring. Rub the Precipitated Phosphate of Calcium with a small quantity of the Syrup to a smooth, thin paste, mix this thoroughly with the rest of the Syrup, and filter through a well-wetted white filter. Return the first portions until the filtrate runs off clear. When all the liquid has passed, wash the filter with a mixture of Alcohol, *one part*, and Distilled Water, *six parts*, until the whole product weighs *three thousand parts* 3000

¶ This formula is based upon the process recommended to the Committee by Mr. B. F. McIntyre.

*** Elixir Cinchonæ et Ferri.** *Elixir of Cinchona and Iron.*

Take of Elixir of Cinchona, *one hundred and twenty-four parts* 124
Citrate of Iron and Ammonium, *two parts* 2

Rub the Ammonio-Citrate of Iron to a fine powder in a mortar, and dissolve it in the Elixir of Cinchona by agitation.

¶ Formula of Mr. B. F. McIntyre. Each fl. 3 represents about 2 grains of Cinchona and 1 grain of Amm. Cit. of Iron.

*** Elixir Ferri, Quiniæ et Strychniæ Phosphatum.**
Elixir of the Phosphates of Iron, Quinia, and Strychnia.

Take of Sulphate of Quinia, *thirty-two parts* 32
Strychnia, *one part* 1

Pyrophosphate of Iron, *one hundred and twenty parts* . 120
Alcohol ("Strong. Alc."),
Diluted Sulphuric Acid,
Water of Ammonia,
Distilled Water,
Simple Elixir, of each, *a sufficient quantity* . . . q. s.

Dissolve the Sulphate of Quinia in Distilled Water, *fifteen hundred parts* 1500
with the aid of Diluted Sulphuric Acid. Precipitate the quinia by the addition of Water of Ammonia in slight excess, and wash the precipitated alkaloid with cold Distilled Water, *three thousand parts* . . . 3000
When the precipitate has drained, put the filter with the precipitate into a strong piece of cloth, and press out as much of the liquid as possible. Introduce the quinia with the fragments of the filter paper adhering to it, into a bottle, and add alcohol, *one hundred and ninety parts* . . 190
When the alkaloid has dissolved, add
Simple Elixir, *two thousand five hundred parts* 2500
and mix. Dissolve the Strychnia in Alcohol, *eighty parts* . . . 80
mixed with Distilled Water, *fifteen parts* 15
with the aid of a gentle heat, if necessary, and add it to the previous solution.

Dissolve the Pyrophosphate of Iron in warm
Distilled Water, *one hundred and eighty parts* 180
Mix this with the solution previously prepared and add enough Simple Elixir to make the whole product weigh *four thousand parts* . . 4000
Finally filter.

¶ This formula has been constructed on the basis of that adopted by the Rhode Island Pharmaceutical Association in 1877. If this formula is adopted, there would be no need of the *Syrupus Ferri, Quiniæ et Strychniæ Phosphatum*, and *vice versa*.

*** Elixir Simplex** (*a*). *Simple Elixir.*

Take of Oil of Orange, *five parts* 5
Oil of Ceylon Cinnamon, *two parts* 2
Sugar, in coarse powder, *one thousand parts* . . . 1000
Precipitated Phosphate of Calcium, *thirty parts* . . 30
Alcohol ("Stronger Alc."), *a sufficient quantity* . . q. s.
Distilled Water, *a sufficient quantity* . . . . . q. s.

Dissolve the Oils in sufficient Alcohol to make the solution weigh *three hundred parts* 300
Dissolve the Sugar in Distilled Water, *seventeen hundred parts* . 1700
by agitation, without heat. Add the latter solution gradually, and in small portions at a time, to the alcoholic solution of the oils, constantly stirring, until a permanent milkiness makes its appearance. Then reverse the proceeding, by gradually pouring the milky mixture into the remainder of the Syrup, under constant stirring. Rub the Precipitated

Phosphate of Calcium with a small quantity of the Syrup to a smooth, thin paste, mix this thoroughly with the rest of the syrup, and filter through a well-wetted white filter. Return the first portions, until the filtrate runs off clear. When all the liquid has passed, wash the filter with a mixture of Alcohol, *one part*, and Distilled Water, *six parts*, until the whole product weighs *three thousand parts* 3000

¶ Substituting grammes for parts, the product will measure about 555 cc. or 5 pints 14 oz., or nearly 6 pints.

Mr. B. F. McIntyre furnished the following formula, of which the above is a modification. The proportions have been simplified, and the filtration facilitated by the use of Phosphate of Calcium.

***Elixir Simplex** (*b*). *Simple Elixir.*

Take of	Oil of Orange, *five parts*	5
	Oil of Ceylon Cinnamon, *two parts*	2
	Alcohol, *three hundred and seventy-six parts* . . .	376
	Sugar, granulated, *nine hundred and fifty-eight parts* .	958
	Water, distilled, *one thousand eight hundred and eighty-six parts*	1886

Make a solution of the oils in the Alcohol, and form a Syrup by dissolving the Granulated Sugar in the Distilled Water without the use of heat. Add the Syrup to the alcoholic solution of oils until a milkiness or slight precipitation of oils is produced, then pour the mixture into the remaining Syrup, constantly stirring during the whole process.

Filter through a double plaited filter, or use filtering paper pulp, made by beating scraps of filtering paper in a mortar, in the proportion of 24 parts of paper to 80 parts of the above Simple Elixir, pour the pulp in a plaited filter and finish the filtration of remaining elixir.

The product should weigh *three thousand two hundred and twenty-six parts* 3226

Emplastrum Aconiti. *Aconite Plaster.*

Take of	Aconite Root, in fine powder, *ten parts*	10
	Alcohol, *a sufficient quantity*	q. s.
	Resin Plaster, *a sufficient quantity*	q. s.

Moisten the Aconite with Alcohol, *three parts* 3
and pack it firmly in a conical percolator. Cover the surface with a disk of paper, and pour upon it Alcohol, *seven parts* 7
When the liquid begins to drop from the percolator close the lower orifice with a cork, and, having closely covered it to prevent evaporation, set it aside in a moderately warm place for four days. Then remove the cork, and gradually pour Alcohol on top, until the Aconite is exhausted. Distil off the Alcohol, until the residue amounts to about *five parts* . . 5
and evaporate the latter on a water-bath to a soft uniform extract. Add

to this sufficient Resin Plaster, previously melted, to make the mixture weigh *ten parts* 10
and then mix the whole thoroughly together.

¶ This is as close an approach to the old formula as can be constructed. If the Fluid Extract of Aconite, or as the U. S. Ph. calls it: *Linimentum Aconiti* (see this), is hereafter directed to be prepared without glycerin, this preparation may be used instead of making a special extract, as in the above formula.

Emplastrum Ammoniaci. *Ammoniac Plaster.*

Take of Ammoniac, *two parts* 2
Diluted Acetic Acid, *three parts* 3

Digest the Ammoniac, contained in a porcelain vessel, in the Diluted Acetic Acid, avoiding contact of metals, until the gum-resin is completely emulsionized; then strain. Evaporate the strained liquid by means of a water-bath, stirring constantly until it acquires the proper consistence.

Emplastrum Ammoniaci cum Hydrargyro.
Plaster of Ammoniac with Mercury.

Take of Ammoniac, *seven hundred and twenty parts* 720
Mercury, *one hundred and eighty parts* 180
Olive Oil, *eight parts* 8
Sublimed Sulphur, *one part* 1
Diluted Acetic Acid, *five hundred and forty parts* . . 540
Lead Plaster, *a sufficient quantity* . . . . . q. s.

Digest the Ammoniac with the Diluted Acetic Acid on a water-bath, avoiding contact of metals, until the gum-resin is completely emulsionized. Strain and evaporate the strained liquid under constant stirring on a water-bath, until a small portion taken from the vessel hardens on cooling. Heat the oil and gradually add the sulphur, stirring constantly until they unite; then add the Mercury, and triturate until globules of the latter cease to be visible. Add the mixture of Oil, Sulphur, and Mercury, while yet hot, gradually to the Ammoniac, and then add *a sufficient quantity* of Lead Plaster, previously melted by means of a water-bath, to make the whole mixture weigh *one thousand parts* 1000
Lastly incorporate the ingredients thoroughly.

¶ The Ammoniac was directed to be boiled with water in the last Pharm. This is not only detrimental to the gum-resin, but it generally fails in its object to make a homogeneous melted mass of it. Prof. Maisch's plan (see *Nat. Dispens.*, p. 518) to triturate the ammoniac with benzin, is impracticable when working with larger quantities, and it does not fully accomplish the object. The use of dil. Acetic Acid is much preferable; and as the acid is subsequently dissipated by evaporation, it can do no harm. The resulting plaster is very nice, and of a brighter color than when made by the previous processes.

Emplastrum Antimonii. *Antimonial Plaster.*

Take of Tartrate of Antimony and Potassium, in fine powder, *two parts* 2
Yellow Wax, *one part* 1
Burgundy Pitch, *eight parts* 8

Melt the Burgundy Pitch and Wax by means of a water-bath, and strain; stir the mixture until it begins to stiffen; then add the Tartrate of Antimony and Potassium, and incorporate it thoroughly by assiduous stirring.

Emplastrum Arnicæ. *Arnica Plaster.*

Take of Extract of Arnica, *one part* 1
Resin Plaster, *two parts* 2

Melt the Resin Plaster by means of a water-bath; then add the Extract of Arnica, and stir them well together until the mixture thickens on cooling.

Emplastrum Asafœtidæ. *Asafœtida Plaster.*

Take of Asafœtida, *two parts* 2
Lead Plaster, *two parts* 2
Galbanum, *one part* 1
Yellow Wax, *one part* 1
Alcohol, *seven parts* 7

Dissolve the Asafœtida and Galbanum in the Alcohol by means of a water-bath, strain the liquid while hot, and evaporate it to the consistence of honey; then add the Plaster and Wax, previously melted together, stir the mixture well, and evaporate to the proper consistence.

Emplastrum Belladonnæ. *Belladonna Plaster.*

Take of Belladonna Root, in fine powder, *ten parts* 10
Alcohol, *a sufficient quantity* . . . . . q. s.
Resin Plaster, *a sufficient quantity* . . . . . q. s.

Moisten the Belladonna with Alcohol, *three parts* 3
and pack it firmly in a conical percolator. Cover the surface with a disk of paper, and pour upon it Alcohol, *seven parts* 7
When the liquid begins to drop from the percolator, close the lower orifice with a cork, and having closely covered the percolator, set it aside for 4 days. Then remove the cork, and gradually pour on Alcohol until the Belladonna is exhausted. Distil off the Alcohol until the residue amounts to about *five parts*, ... 5
and evaporate the latter on a water-bath to a soft extract. Add to this sufficient Resin Plaster, previously melted, to make the mixture weigh *ten parts* 10

¶ As closely constructed after the old formula as possible. If the Fl. Extract of

Belladonna Root should hereafter be directed to be made without glycerin, a corresponding quantity of it may be used, instead of making it purposely, as in the above formula.

Emplastrum Ferri. *Iron Plaster.*

Take of	Subcarbonate of Iron, *one part*	1
	Lead Plaster, *eight parts*	8
	Canada Turpentine, *one part*	1
	Burgundy Pitch, *one part*	1

Melt the Lead Plaster, Canada Turpentine and Burgundy Pitch by means of a water-bath; then add the Subcarbonate of Iron, and stir constantly until the mixture thickens on cooling.

¶ *Two parts* of Burgundy Pitch, which the old formula called for, are here replaced by *one part* each of Canada Turpentine and Burgundy Pitch, which is said to make a more adhesive and flexible plaster.

Emplastrum Galbani Compositum. *Compound Galbanum Plaster.*

Take of	Galbanum, *eight parts*	8
	Canada Turpentine, *one part*	1
	Burgundy Pitch, *three parts*	3
	Lead Plaster, *thirty-six parts*	36

To the Galbanum and Turpentine, previously melted together and strained, add first the Burgundy Pitch, and then the Lead Plaster, melted over a gentle fire, and mix the whole together.

Emplastrum Hydrargyri. *Mercurial Plaster.*

Take of	Mercury, *three parts*	3
	Olive Oil, *one part*	1
	Resin, *one part*	1
	Lead Plaster, *six parts*	6

Melt the Oil and Resin together, and, when they have become cool, rub the Mercury with them, until globules of the metal are no longer visible. Then gradually add the Lead Plaster, previously melted, and mix the whole thoroughly together.

Emplastrum Opii. *Opium Plaster.*

Take of	Extract of Opium, *one part*	1
	Burgundy Pitch, *three parts*	3
	Lead Plaster, *twelve parts*	12
	Water, *one part*	1

Rub the Extract with the Water until uniformly soft, then add it to the Burgundy Pitch and Lead Plaster, melted together by means of a water-bath,

and continue the heat for a short time, stirring constantly until the moisture is evaporated.

The product should weigh *sixteen parts* 16

¶ The directions of the present U. S. Ph. have been simplified; otherwise the preparation is the same.

Emplastrum Picis Burgundicæ. *Burgundy Pitch Plaster.*

Take of Burgundy Pitch, *twelve parts* 12
Yellow Wax, *one part* 1

Melt them together, strain, and stir constantly until they thicken on cooling.

Emplastrum Picis Canadensis. *Canada Pitch Plaster.*

Take of Canada Pitch, *twelve parts* 12
Yellow Wax, *one part* 1

Melt them together, strain, and stir constantly until they thicken on cooling.

Emplastrum Picis cum Cantharide. *Plaster of Pitch with Cantharides.*

SYN. *Emplastrum calefaciens.*

Take of Burgundy Pitch, *twelve parts* 12
Cerate of Cantharides, *one part* 1

Heat the Cerate as nearly as possible to 100° C. (212° F.) on a water-bath, and having continued the heat for 15 minutes, strain it through a close strainer which will retain the powdered cantharides, add to the strained liquid the Pitch, melt them together by means of a water-bath, and having removed the vessel, stir the mixture constantly until it thickens on cooling.

¶ Same as at present, except the wording of the direction.

Emplastrum Plumbi. *Lead Plaster.*

Take of Oxide of Lead, in very fine powder, *fifteen parts* . . 15
Olive Oil, *twenty-eight parts* 28
Water, *a sufficient quantity* . . . . . q. s.

Rub the Oxide of Lead with about *one-half* of the Olive Oil, and add the mixture to the remainder of the Oil, contained in a suitable vessel of about twice the capacity of the ingredients. Then add
Boiling Water, *four parts* 4
and boil the whole together until a homogeneous plaster is formed; adding from time to time during the process a little boiling Water, as that at first added is evaporated.

Char.—Lead Plaster is white, pliable, and tenacious, free from greasiness or stickiness. It should not contain any undissolved Oxide of Lead, which would be left behind on dissolving the Plaster in warm Oil of Turpentine.

Emplastrum Resinæ. *Resin Plaster. Adhesive Plaster.*

Take of	Resin, in fine powder, *one part*	1
	Lead Plaster, *six parts*	6

To the Lead Plaster, melted over a gentle fire, add the Resin, and when the latter has melted, mix them well together.

*** Emplastrum Resinæ Elasticæ.** *India Rubber Plaster.*

¶ The introduction of a good working formula for such a plaster deserves consideration.

Emplastrum Saponis. *Soap Plaster.*

Take of	Soap, sliced, *one part*	1
	Lead Plaster, *nine parts*	9
	Water, *a sufficient quantity*	q. s.

Rub the Soap with hot Water until brought to a semi-liquid state; then mix it with the Lead Plaster, previously melted, and boil to the proper consistence.

*** Emulsiones.** *Emulsions.*

¶ It has been proposed to introduce a few standard formulæ for Emulsions, particularly of Cod-Liver and Castor Oil. Should such formulæ be considered as deserving a place in the pharmacopœia, it will be time enough hereafter to construct them.

Ergota.—Erigeron (*d*).**—Erigeron Canadense.—* Eriodictyon.—* Erythroxylon** (*Coca*).**—* Eucalyptus** (fr. *E. globulus* Labill.).

Euonymus. *Wahoo.*

¶ The so-called resinoid of this, "euonymin," as well as other similar complex substances, have lately been very favorably reported on, as cholagogues, etc. There might be some definite, reliable, concentrated preparations made of Euonymus, Iris versicolor, etc., perhaps in the form of dry alcoholic extracts.

Eupatorium * Perfoliatum.—* Eupatorium Purpureum (?)**—Euphorbia Corollata** (*d*).**—Euphorbia Ipecacuanha** (*d*).

Extracta. *Extracts.*

¶ The list of extracts is submitted, with a few exceptions, merely in form of a list of titles, for want of time to properly revise the processes.

Extractum Aconiti.—E. Arnicæ.—E. Belladonnæ.—E. Belladonnæ Alcoholicum.—E. Cannabis Americanæ (*d*).**—E. Cannabis Indicæ.**

*** Extractum Carnis.** *Extract of Beef.*

An aqueous extract of lean beef, deprived as much as possible of fat, albumen, and gelatin.

Char.—Extract of Beef has a brown color and a pleasant odor resembling

that of roasted meat. It is completely soluble in water, yielding a clear solution. When dried at 110° C. (230° F.), 100 parts of it should not lose over 22 parts of moisture, and, after incineration, should not leave more than 18 parts of ash, containing only a small amount of chloride of sodium. Alcohol of 90% should dissolve not less than 56 per cent of the extract.

Extractum Cinchonæ.—E. Colchici Aceticum.—E. Colocynthidis.—E. Colocynthidis Compositum.—E. Conii (*d ?*)**.—E. Conii Alcoholicum.—E. Digitalis.—E. Dulcamaræ.**

***Extractum Ergotæ.** *Extract of Ergot.*

Take of Fluid Extract of Ergot, *five parts* 5

Evaporate it, on a water-bath, at a temperature not exceeding 52° C. (or 126° F.), under constant stirring, until it is reduced to *one part* . 1

Char.—Extract of Ergot prepared by this process is almost entirely soluble in water. For hypodermic use, the aqueous solution should be filtered, and made up to the original weight by passing water through the filter.

¶ Fluid Extract of Ergot, to be applicable to this process, must have been prepared without glycerin.

***Extractum Euonymi** (*?*)**.—E. Gentianæ.—E. Glycyrrhizæ.**

¶ In order to be consistent in pharmaceutical nomenclature, this should be rendered with "Extract of Liquorice," and the term "Liquorice" should be restricted to the root, in spite of the popular custom to the contrary. Compare also *Glycyrrhiza.*

Extractum Hæmatoxyli (*d*)**.—E. Hellebori.—E. Hyoscyami.—E. Hyoscyami Alcoholicum.—E. Ignatiæ.—* E. Iridis Versicoloris** (*?*)**.**

Extractum Jalapæ *[Alcoholicum]. [*Alcoholic*] *Extract of Jalap.*

Take of Jalap, in moderately fine powder, *ten parts* 10
Alcohol ("Strong. Alcohol"), *a sufficient quantity* . q. s.
Water, *a sufficient quantity* . . . . . q. s.

Moisten the powder with one-fourth of its weight of a mixture of *four parts* of Alcohol and *one part* of Water, pack it in a conical percolator, and pour the same menstruum on top, until the percolate, when dropped into water, produces only a slight precipitate. Distil off the alcohol from the tincture, and evaporate the residue to dryness.

¶ This should be substituted for the officinal preparation which is loaded with the inert aqueous extract. A mixture of 4 parts of alcohol of spec. gr. 0.820, with 1 part of water, will make an alcohol of about the spec. gr. 0.860, containing 75% by weight of absolute alcohol. This menstruum is sufficiently alcoholic. But alcohol of 0.820 may also be used, and in this case the product would approach so closely to the "Resina Jalapæ" that the latter might be dropped. If the present officinal extract is abandoned, the addition of the word "Alcoholicum" in the above title will be unnecessary.

Extractum Juglandis.—E. Krameriæ.—* E. Lupuli.

*** Extractum Malti.** *Extract of Malt.*

Take of Malt, in coarse powder, *one hundred parts* 100
Water, *a sufficient quantity* . . . . . q. s.

Upon the Malt, contained a suitable vessel, pour cold Water, *one hundred parts* . . . . . 100 and allow it to macerate for 6 hours at the ordinary temperature. Then add warm Water, heated to about 30° C. (or 86° F.), *four hundred parts* 400 and digest the whole for one hour at a temperature of 65° C. (or 149° F.). Raise the temperature to the boiling point, and strain with strong expression. Finally evaporate the strained liquid rapidly to the consistence of a thick extract, by means of a water-bath or in a vacuum apparatus.

¶ Some formulæ direct maceration and digestion at a moderate temperature, avoiding boiling. Others direct the boiled liquid, after straining, to be mixed with white of egg in the proportion of the white of *one* egg for every pound of malt, again to be boiled and strained, and then to be evaporated. The above formula is no doubt capable of improvement.

*** Extractum Mezerei.** *Extract of Mezereon.*

Take of Mezereon, in moderately fine powder, *ten parts* . . 10
Alcohol ("Strong. Alc."), *a sufficient quantity* . . q. s.

Moisten the powder with a sufficient quantity of Alcohol, pack it firmly in a conical percolatar, and pour Alcohol on top, until the Mezereon is exhausted. Distil off so much of the Alcohol that the residue may be of the consistence of thick syrup, then transfer it to a capsule, and evaporate it, on a water-bath, to the proper consistence.

¶ The ethereal extract has been in considerable demand lately. The above appears to have some advantages over the former; see *Nat. Disp.* [2], 586.

Extractum Nucis Vomicæ.—E. Opii.—E. Physostigmatis.—E. Podophylli.—E. Quassiæ.—E. Rhei.—E. Senegæ.—E. Stramonii Foliorum (*d*).**—E. Stramonii Seminis.—E. Taraxaci.—* E. Tritici** (fr. *Triticum repens* L.)**.—E. Valerianæ.**

*** Extracta Sicca.** *Dry Extracts.*

¶ A separate class of *Dry Extracts*, "Extracta sicca," deserve introduction. Further experiments are necessary to determine the best method of preparing and preserving them. Sugar of milk appears to be the best diluent, where it is necessary to produce a fixed weight by the addition of an inert substance. Whether the fluid extracts should be carefully evaporated on milk-sugar to a definite percentage, or the solid extracts should be chosen as a starting-point, remains to be decided. There is certainly much room for improvement of the so-called dry extracts of the German pharmacopœia.

Extracta Fluida. *Fluid Extracts.*

¶ The subject of Fluid Extracts has given the Committee much trouble, and has even at this time not been exhausted. There is no need to repeat here *in extenso* what has been already published in the *Proceedings of the Am. Pharm. Asso.* on this

subject. It will be sufficient to briefly describe the different processes which have been recommended, or have been in use before.

As the plan adopted by the Committee contemplated the abandonment of the use of definite weights and measures in the formulæ of the U. S. Ph., one of the first points for the Committee to decide was: whether fluid extracts, made to represent the crude drug *weight* for *weight*, would differ so much in strength from those at present in use, which represent the drug *measure* for *weight*, that their adoption would involve difficulties in prescribing. It was ascertained, chiefly by the experiments of Dr. E. R. Squibb, that the differences in strength were by no means so great, at least in the case of highly active fluid extracts, as was at first anticipated, and the conclusion was arrived at, that by a judicious selection of menstrua, fluid extracts may be prepared representing the drug *weight* for *weight*, and at the same time very nearly representing the crude drug *measure* for *weight*. On the other hand, it cannot be denied that the practical carrying out of this plan involves considerable difficulties, which are clearly set forth in the last Report on Fluid Extracts made by Prof. C. Lewis Diehl in the following words:

"It is well known that different samples of the same drug vary in their strength, and often quite materially. It may, therefore, be argued that, if we can approximately arrive at the weight of a given volume of a fluid extract, obtained by a given process, we can formulate the latter so as to dispense with measurement by volume altogether.

"I hold, however, that this would be venturing upon very dangerous ground. We must make a beginning somewhere, and the beginning in all cases except opium and a few other highly active drugs, should be the drug itself—the conditions of which admit of explicit description. Now, if it is claimed that by a change in the notation of the officinal formulas to parts by weight, the prescribers will at once—or at all events, after a reasonably short time—accommodate themselves to the new system of notation, a perfectly plain course would be before us; we would make the fluid extracts correspond, in weight, to that of the drug from which they are prepared. But it will not be contended that so complete a revolution in the present mode of prescribing is expected, if, indeed, it is intended. On the contrary, it appears to be the object to so construct the formulas for officinal liquid preparations that, while the relation of their weight to volume remains the same as now, all measurement shall be expressed by weight. A glance at table II. in my first report will show that we cannot hope to attain accuracy if we attempt such a construction of the formulas *for fluid extracts*; and since accuracy is one of the main objects for discarding measurement by volume, I do not see how we can gain anything by discarding an accuracy that is attainable by care, for one that is only attainable by accident, no matter how careful the manipulation may be. I would, therefore, say that, if we aim to secure uniformity as regards the quantity of drug to be represented by a given volume of fluid extract, we cannot discard volumetric measurement. And it is not at all necessary in the construction of formulas that we should express quantities by the metric or any other system of weights and measures, although I can see no objection to it, more particularly since an important branch of our national medical service has adopted and directs the formulation of prescriptions by metric weights and measures. But, if there exists a reasonable objection to the adoption of a particular system, the notations in the formulas of the U. S. Ph. could be expressed by the terms *weight* and *volume*: a 'volume' being understood to be the space occupied by pure water, at a temperature of 15° C., corresponding to a 'weight,' arbitrarily chosen as circumstances may require. The process for a fluid extract might then be formulated as stated below, under 4."

The following processes for making Fluid Extracts deserve consideration here:

1. *Proctor's Process* (U. S. Ph. of 1860). This may, briefly and in a general way, be described thus: 16 troy ℥ of the drug are moistened, packed in a

percolator, and extracted with the menstruum until 12 fl. ℥ of first percolate are obtained. This is set aside, and the percolation continued until 32 fl. ℥ of a second percolate have passed. The latter is evaporated to 4 fl. ℥, which are then mixed with the reserved portion.

2. *Campbell's Process* (U. S. Ph. of 1870): 16 troy ℥ of the drug are moistened, packed in a percolator, and the menstruum is poured on top. When the liquid begins to drop from the orifice, the latter is closed with a cork, and the percolator set aside in a moderately warm place for 4 days. The cork is then removed, and 14 fl. ℥ of percolate are collected, which are reserved. A second portion of 10 fl. ℥ is then to be collected, which is to be evaporated to 2 fl. ℥ (mostly with the addition of 1 fl. ℥ of glycerin). The two portions are then mixed together.
3. *Dr. Squibb's Process.* The Process of Repercolation. 32 parts of the powdered drug are divided into 4 equal portions of 8 parts each, one of which is moistened, packed, macerated, and then slowly displaced until exhausted. The percolate is received in fractions of about 4 parts each after the first, the first 6 parts being reserved, and the next fraction used for moistening the second lot of 8 parts of the drug, which is afterwards macerated and displaced with the remaining fractions, the weakest being used last, and then new menstruum to exhaustion. From this portion 8 parts of percolate are reserved. The third and fourth portions of 8 parts each of the drug are percolated in the same manner as the second, and finally the four reserved percolates (6, 8, 8, 8 parts) are mixed to obtain 30 parts of fluid extract. The fractions of weaker percolate from the fourth portion are preserved for a subsequent operation, when from each portion of 8 parts of powder, 8 parts of percolate are received as finished fluid extract, and another set of fractions, and so on. See *Proc. Am. Pharm. Assoc.* for 1878 and *Nat. Dispens.*, p. 595.
4. *Prof. Diehl's "Weight and Volume Process"* (see above): Take of the drug in No. x powder, 16 *weights;* alcohol, water, of each a sufficiency. Mix n weights of alcohol with x weights of water; moisten the powder with a sufficient quantity of this mixture, and having packed it in a percolator suitably prepared, pour on the menstruum until the entire column of powder is penetrated and an excess remains upon the surface. Carefully cover the percolator, set it aside in a moderately warm place, and, after 2 (3, or 4) days, proceed to percolate. Collect the first 12 *volumes* which pass, separately in a bottle graduated to 16 *volumes*, and set this aside carefully stoppered. Continue the percolation until the drug is exhausted. Ascertain the quantity of extractive matter in this second percolate, by the evaporation of a suitable portion of the same to dryness, and then subject the whole to distillation and subsequent evaporation on a water-bath, *until its weight is so far reduced that by the addition of alcohol the strength of the original menstruum be restored*, and it shall measure 4 *volumes*. Finally add these 4 *volumes* of liquid to the 12 *volumes* of reserved percolate, and filter if necessary.

¶ The object which Prof. Diehl seeks to attain is to restore the menstruum of the evaporated portion as nearly as may be to its original alcoholic strength, so that, on

being mixed with the reserved portion, it may not cause precipitation in the latter. It should be distinctly stated that Prof. Diehl does not directly advocate this process for adoption in the next U. S. Ph.; he offers it merely as an alternative, if it should be decided to continue the present relationship of fluid extracts to the crude drug, namely, measure for weight.

As this is not the proper place for a discussion of the merits of the different plans proposed, it will be sufficient to subjoin a list of Fluid Extracts proposed to be included in the next U. S. Ph., each accompanied by a statement of the menstruum recommended. In this list, the terms *Stronger Alcohol* (Str. Alc.) and *Alcohol* (Alc.) are used in the same sense in which they are now employed in the U. S. Ph., namely, of the spec. gr. 0.817 and 0.835 respectively. The accompanying figures represent the fineness of powder. Where two figures are given (for instance, 4-20), this is understood to mean that the whole powder would pass through the coarser (No. 4) sieve, and that the finest portion would pass through the finer (No. 20) sieve. The expression *cc.* means: cut and crushed, or torn into shreds. The figures and menstrua inclosed in brackets [ ] are given on the authority of Dr. E. R. Squibb, as at present used by him; but he thinks many of the menstrua might be weaker in alcohol. Those which are inclosed in parentheses ( ) are offered as suggestions of individual members of the Committee. For instance:

[80. Alc. 2, Wat. 1] means that Dr. Squibb proposes to employ the drug in powder of such a fineness that it will pass through a sieve having meshes one-eightieth inch square less the diameter of the wire; and that a mixture by weight of 2 parts of alcohol and 1 part of water is at present used by him as menstruum.

(20. Alc.) means that some members of the Committee propose to use the drug in powder, passing through a sieve with meshes of one-twentieth inch square, etc.; and to use alcohol as menstruum.

Extractum Fluidum: ***Apocyni Cannabini** (80; Dil. Alc.).—***Aromaticum** [full title: *Extractum Aromaticum Fluidum.* From *Pulvis Aromaticus*, U. S. Ph. 20; Str. Alc., 2; Wat., 1].—**Asclepiadis Tuberosæ** [20; Dil. Alc.].—***Aurantii** (20; Dil. Alc.).—**Belladonnæ Radicis** [80; Str. Alc., 2; Wat., 1].—***Berberidis** (40; Dil. Alc.).—**Buchu** [80; Str. Alc.].—***Calami** (20; Str. Alc., 3; Wat., 2).—***Castaneæ** (exhaust 16 parts with hot water; add Glyc., 5; and Sugar, 5; evap. to 16 parts).—**Chimaphilæ** (50; Alc., 3; Glyc., 2; Wat., 2).—**Calumbæ** [4-12; Dil. Alc.].—***Capsici** [20; Str. Alc.].—***Cardamomi Co.** [Cardam., 6; Caraway, 2; Cinnam., 5 parts; 20; Str. Alc., 2; Wat., 1].—**Cimicifugæ** [20; Str. Alc.].—**Cinchonæ** [40; Alc., 3; Glyc., 1].—**Colchici Radicis** (50; Alc., 10; Glyc., 4; Wat., 1).—**Colchici Seminis** [80; Str. Alc., 2; Wat., 1].—**Conii Fructus** [20; Dil. Alc., 865; Acet. Ac., 1].—**Cornus Floridæ** (60; Dil. Alc., 5; Glyc., 1).—**Cubebæ** [20; Str. Alc.].—***Cypripedii** [20; Str. Alc.].—**Digitalis** [80; Alc.].—**Dulcamaræ** [80; Dil. Alc.].—**Ergotæ** [30; Dil. Alc., 865; Acet. Ac., 1].—**Erigerontis Canadensis** (40; Alc.).—***Erythroxyli** [20: Str. Alc., 1; Wat., 2.].—***Eucalypti** [20; Str. Alc.].—***Eupatorii Perfoliati** *and* **E. Purpurei** (4-20, Alc., 5; Glyc., 3; Wat., 12).—***Frangulæ** [20; Str. Alc., 4; Wat., 15].—**Gelsemii** [80; Dil. Alc.].—**Gentianæ** [20; Dil. Alc.].—**Geranii** (50; Dil. Alc., 5; Glyc., 1).—**Glycyrrhizæ** [6-50; Str. Alc., 2; Glyc., 1; Wat., 7].—**Gossypii Radicis** [cc.; Str. Alc., 2; Glyc., 1; Wat., 1].—***Grindeliæ Robustæ** (4-20; Alc., 3; Wat., 2).—***Guaranæ** [50; Dil. Alc.].—***Hamamelidis** (cc.; Alc., 1; Glyc., 1; Wat., 4).—***Helianthemi** (4-20; Alc., 5; Glyc., 3; Wat., 12).—**Hydrastis** [20; Dil. Alc.].—**Hyoscyami** [80; Str. Alc., 2; Wat., 1].—**Ipecacuanhæ** [80; Alc.].—***Juglandis** [80; Dil. Alc.].—***Juniperi** [8; Dil. Alc.].—**Krameriæ** [80; Alc., 28; Glyc., 16; Wat., 21].—

*** Lactucarii** [12; Dil. Alc.; or, see formula at end of this list].—*** Lappæ** (20; Dil. Alc.).—*** Leptandræ** (40; Dil. Alc., 5; Glyc., 1).—**Lupulinæ** [60; Str. Alc.].—**Matico** (50; Dil. Alc.].—**Mezerei** (40; Str. Alc.).—*** Nucis Vomicæ** [12; Str. Alc.].—**Pareiræ** [80; Str. Alc., 2; Glyc., 3; Wat., 5].—*** Physostigmatis** (60; Alc.).—*** Pilocarpi** [20; Str. Alc., 1; Wat., 2].—*** Podophylli** [20; Str. Alc.].—**Pruni Virginianæ** [20; Str. Alc., 7; Glyc., 11; Wat., 17], or (Alc., 5; Glyc., 1; Wat., 12), or (Glyc., 2; Wat., 3).—*** Quassiæ** [8; Dil. Alc., 2; Wat., 1].—**Rhei** [20; Alc., 3; Glyc., 1].—**Rubi** (40; Dil. Alc.).—*** Rumicis** (40; Alc., 5; Glyc., 3; Wat., 12).—**Sabinæ** (50; Str. Alc.).—*** Sanguinariæ** [20; Dil. Alc., 865; Acet. Ac., 1].—**Sarsaparillæ Co.** [6–30; Str. Alc., 1; Glyc., 1; Wat., 3].—**Sarsaparillæ** [6–30; Str. Alc., 1; Glyc., 1; Wat., 3].—**Scillæ** [entire; Dil. Alc.].—*** Scoparii** (cc.; Alc., 5; Glyc., 3; Wat., 12).—**Senegæ** [20; Str. Alc., 800; Aq. Ammon., 1; Wat., 400].—**Sennæ** [20; Dil. Alc.].—**Serpentariæ** [80; Dil. Alc.].—**Spigeliæ et Sennæ** [20; Dil. Alc.].—**Spigeliæ** [20; Dil. Alc.].—*** Stillingiæ Co.** (Stilling., 4; Turkey Corn (Corydalis), 4; Blue Flag, 2; Elder fl., 2; Pipsissewa, 2; Coriand., 1; Prickly Ash berr., 1 part. 4–20; Alc., 1; Glyc., 2; Wat., 4).—*** Stillingiæ** [cc.; Dil. Alc.].—*** Stramonii Seminis** [20; Str. Alc.].—*** Sumbul** (cc.; Dil. Alc.).—**Taraxaci** [20; Dil. Alc.].—*** Tritici** (exhaust 16 parts with hot water; add Glyc., 6; evaporate to 16 parts).—**Uvæ Ursi** [26; Str. Alc., 2; Glyc., 3; Wat., 5].—**Valerianæ** [20; Str. Alc.]:—**Veratri Viridis** [20; Alc.].—*** Xanthoxyli Caroliniani** [20; Dil. Alc.].—*** Xanthoxyli Fraxinei** [20; Dil. Alc.].—**Zingiberis** [20; Str. Alc.].

*** Extractum Lactucarii Fluidum.** *Fluid Extract of Lactucarium.*

Take of	Lactucarium, *sixteen parts*	16
	Benzin, *thirty-two parts*	32
	Diluted Alcohol, *a sufficient quantity*	q. s.

Beat the Lactucarium thoroughly in an iron mortar, then introduce it into a wide-mouth bottle, of the capacity of about *forty-eight parts of water*, add the Benzin, cork tightly, and macerate, with frequent agitation, for 24 hours. Then let it stand for about 24 hours, or until the Lactucarium subsides, and the Benzin solution becomes clear or nearly so. Decant the Benzin solution, transfer the Lactucarium to a stone or glass slab, spread it as thin as possible, and allow it to remain there until it is completely dry (at least 24 hours). Then rub it in an iron mortar with an *equal weight* of clean sand, introduce it into a conical percolator, first prepared with a disk of flannel and a thin layer of sand, pack lightly and add Diluted Alcohol to the depth of several inches. When the liquid begins to drop, close the orifice of the percolator with a cork and allow it to stand at rest, well-covered, for 24 hours. Now remove the cork and collect *four parts* 4
of percolate, which set aside. Continue the percolation until the Lactucarium is exhausted, recover the Alcohol from the percolate by distillation from a water-bath, and evaporate the residue on a water-bath to *ten parts* 10

Mix this with the reserved portion, filter, and wash the filter with enough Diluted Alcohol to make the whole product weigh *sixteen parts* . . 16

¶ This is Mr. Lemberger's formula. It yields a good product, and is introduced chiefly for the purpose of preparing the syrup quickly when wanted.

*** Fel Bovis.**

*** Fel Bovis Purificatum.** *Purified Ox-gall.*

Take of Fresh Ox-gall, *one part* 1
Alcohol ("Strong. Alc."), *one part* 1
Purified Animal Charcoal, *a sufficient quantity* . . . q. s.

Mix the Ox-gall with the Alcohol thoroughly by shaking in a bottle. Allow it to stand at rest for a short time; then filter, transfer the filtrate to a flask and distil off the Alcohol. Add to the residuary liquid, gradually and in small portions at a time,
Purified Animal Charcoal, *a sufficient quantity* . . . . . q. s.
so that a small filtered sample of the liquid will have only a faint yellow color. Filter the solution, evaporate it on a water-bath, and dry the residuary extract completely, in thin layers, spread upon plates of glass or porcelain, at a temperature not exceeding 100° C. (=212° F.). Preserve it in small glass-stoppered vials.

Char.—Purified ox-gall forms yellowish-white scales or an hygroscopic powder, completely soluble in water and alcohol, leaving behind, on incineration, but a very small residue of alkaline reaction. 7 parts correspond to about 100 parts of fresh ox-gall.

Fermentum (*d*).—*** Ferri Bromidum** (? see *Syrupus Ferri Brom.*).

Ferri Chloridum. *Chloride of Iron.*

Take of Iron, in the form of fine wire, and cut into small pieces, *fifteen parts* 15
Hydrochloric Acid, *eighty-six parts* 86
Nitric Acid, *a sufficient quantity* . . . . . q. s.
Distilled Water, *a sufficient quantity* . . . . . q. s.

Put the Iron wire into a capacious flask, pour upon it
Hydrochloric Acid, *fifty-four parts* 54
and let the mixture stand until effervescence ceases; then heat it to the boiling point, decant the liquid, filter through paper, and, having rinsed the flask and Iron wire with a little boiling Distilled Water, pass the washings through the filter. Add to the filtered liquid
Hydrochloric Acid, *thirty-two parts* 32
and pour the mixture slowly and gradually in a fine stream into
Nitric Acid, *eight parts* 8
contained in a capacious porcelain vessel. After effervescence ceases, apply heat, by means of a sand-bath, until the liquid is free from nitrous

odor and ceases to yield a blue precipitate or color with ferricyanide of potassium. Should the latter be the case, a little more Nitric Acid must be added, and the excess evaporated off. Transfer the liquid to a smaller capsule, evaporate it, by a gentle heat, on a sand-bath, until it is reduced to *sixty-five parts* 65
and set this aside, covered with glass, until it forms a solid, crystalline mass. Lastly, break it into pieces, and keep the fragments in a glass-stoppered bottle protected from the light.

Ferri Citras. *Citrate of Iron.*

Take of Solution of Citrate of Iron, *a convenient quantity* . q. s.

Evaporate the solution, at a temperature not exceeding 60° C. (or 140° F.), to the consistence of syrup, and spread it on plates of glass, so that the salt, when dry, may be obtained in scales.

Ferri et Ammonii Citras (*a*). *Citrate of Iron and Ammonium.*

Take of Solution Citrate of Iron, *three parts* 3
Water of Ammonia, *one part* 1

Mix the solution of Citrate of Iron with the Water of Ammonia, evaporate the mixture at a temperature not exceeding 60° C. (or 140° F.) to the consistence of syrup, and spread it upon plates of glass, so that the salt, when dry, may be obtained in scales.

Char.—Garnet red, translucent scales, having a slightly ferruginous taste, and readily and wholly soluble in water. The solution causes no change in the color of litmus or turmeric, and does not yield a precipitate with ferrocyanide of potassium. Solution of potassa produces with it a precipitate of ferric oxide, and when rubbed with potassa and moistened, the salt emits the odor of ammonia.

¶ This formula has been constructed on the basis of the formula of the present U. S. Ph. The water of ammonia is slightly in excess, but this is lost during the evaporation.

		Approximations.		
Liq. Ferri Cit. .	16 fl. ℥ = 9041 grs.	77.4	77	3
Aqua Amm. .	6 fl. ℥ = 2685 "	22.5	23	1

Ferri et Ammonii Citras (*b*). *Citrate of Iron and Ammonium.*

Take of Solution of Tersulphate of Iron, *seventy parts* 70
Citric Acid, *twenty-one parts* 21
Water of Ammonia, *a sufficient quantity* . . . . q. s.
Water, *a sufficient quantity* . . . . . q. s.

To Water of Ammonia, *sixty-four parts* 64
diluted with cold Water, *one hundred parts* 100
add, under constant stirring, the Solution of Tersulphate of Iron, previously diluted with cold Water, *two hundred parts* 200

Pour the whole on a wet muslin strainer, allow the precipitate to drain, then return it to the vessel, and mix it intimately with cold
Water *eight hundred parts* 800
Again drain it on the strainer, and repeat the same operation once more.

Place the drained precipitate into an evaporating vessel, add to it
Citric Acid, *thirteen parts* 13
and stir until the latter is dissolved. Then add to this mixture a solution, obtained by dissolving Citric Acid, *eight parts* 8
in a slight excess of Water of Ammonia, and evaporating to *twenty-two parts* 22
Stir well, and when the hydrated oxide of iron is dissolved, filter and evaporate to the consistence of a thick syrup. Spread this on plates of glass, so that the salt, when dry, may be obtained in scales.

¶ This formula has been constructed on the basis of that furnished by Mr. J. U. Lloyd, who, however, employed definite weights and measures which were recalculated into the nearest round numbers of parts by weight. The several quantities of Mr. Lloyd's formula bear the following relation to parts by weight:

			Approximations.	
Sol. Tersulph. Iron	16 fl. ℥	9,624 grs.	700	70
Citric Acid, total	2,844 grs.	2,844 "	208	21
of this to be added to Ox. of Iron	1,094 "	1,094 "	80	8
to be made into Cit. of Amm.	1,750 "	1,750 "	128	13
This solution to make	5 fl. ℥	ab. 3,000 "	220	22
Water of Ammonia for Precipitation	20 fl. ℥	8,749 "	634	64
Cold Water	2 *O*	ab. 14,500 "	1,057	100
Do. do.	2 *O*	ab. 29,000 "	2,114	200

Ferri et Ammonii Sulphas.

Ferri et Ammonii Tartras. *Tartrate of Iron and Ammonium.*

Take of Solution of Tersulphate of Iron, *ninety parts* . . . 90
Tartaric Acid, *sixty parts* 60
Carbonate of Ammonium, *a sufficient quantity* . . . q. s.
Water of Ammonia, *seventy-two parts* 72
Distilled Water, *a sufficient quantity* . . . . . q. s.
Water, *a sufficient quantity* . . . . . q. s.

To the Water of Ammonia, previously diluted with cold
Water, *one hundred and eighty parts* 180
add, under constant stirring, the Solution of Tersulphate of Iron, previously diluted with cold Water, *nine hundred parts* 900
Pour the whole on a wet muslin strainer, allow the precipitate to drain, then return it to the vessel, and mix it intimately with cold
Water, *one thousand parts* 1000
Again drain it on the strainer, and repeat the operation once more. Then allow the precipitate to drain completely.

Dissolve *one-half* of the Tartaric Acid in
Distilled Water, *one hundred and thirty parts* 130
neutralize the solution exactly with Carbonate of Ammonium, then add *the*

other half of the Tartaric Acid, and dissolve by the application of a gentle heat. Then, while continuing the heat, which should not exceed 60° C. (=140° F.), add the magma of hydrated oxide of iron in small portions at a time until it is no longer dissolved. Filter the solution, evaporate it at a temperature not exceeding 60° C. (=140° F.) to about *one hundred and thirty parts* 130
and spread it on plates of glass, so that the salt, when dry, may be obtained in scales.

¶ Characters, as at present. This formula is slightly altered, it is believed to advantage.

Ferri et Potassii Tartras (*a*). *Tartrate of Iron and Potassium.*

Take of Solution of Tersulphate of Iron, *twelve parts* 12
Bitartrate of Potassium, *four parts* 4
Water of Ammonia, *eleven parts* 11
Distilled Water, *forty parts* 40
Water, *a sufficient quantity* . . . . . q. s.

To the Water of Ammonia, previously diluted with cold Water, *twenty parts* 20
add the solution of Tersulphate of Iron, previously diluted with cold Water, *thirty-four parts* 34
Pour the whole on a wet muslin strainer, allow the precipitate to drain, then return it to the vessel, and mix it intimately with cold Water, *one hundred and forty parts* 140
Again drain it on the strainer, and repeat the same operation once more.

Mix the Bitartrate of Potassium with the Distilled Water, heat the mixture to 60° C. (= 140° F.), and keeping it at that temperature, gradually add the drained Hydrated Oxide of Iron, frequently stirring, until, after the lapse of two hours, it is no longer dissolved. Set the liquid aside in a cool and dark place, filter it when cold, evaporate the filtrate at a temperature not exceeding 60° C. (= 140° F.) to the consistence of thick syrup, and spread it upon plates of glass or porcelain, so that the salt, when dry, may be obtained in scales.

¶ The proportions are calculated on the basis of the formula in the present U. S. Ph. The formula was extended so as to include the preparation of the hydrated oxide of iron, and made more precise in other respects. In practice, however, the formula does not work well.

Ferri et Potassii Tartras (*b*). *Tartrate of Iron and Potassium.*

Take of Solution of Tersulphate of Iron, *twelve parts* 12
Bitartrate of Potassium, *four parts* 4
Water of Ammonia, *a sufficient quantity* . . . . . q. s.
Distilled Water, *thirty-two parts* 32
Water, *a sufficient quantity* . . . . . q. s.

To Water of Ammonia, *eleven parts* 11
diluted with cold Water, *twenty parts* 20
add the Solution of Tersulphate of Iron, previously diluted with cold Water, *thirty-four parts* 34
Pour the whole on a wet muslin strainer, allow the precipitate to drain, then return it to the vessel, and mix it intimately with cold water, *one hundred and forty parts* 140

Again drain it on the strainer, and repeat the same operation once more.

Put the drained precipitate into a stone or porcelain vessel, add to it Distilled Water, *thirty-two parts* 32
heat the mixture by means of a water or steam-bath to a temperature not exceeding 60° C. (= 140° F.), add the Bitartrate of Potassium and stir until the Hydrated Oxide of Iron is dissolved.

Filter while hot, and let the filtrate stand in a cool place for 24 hours. Then stir it well with a wooden or porcelain spatula, so that the precipitate which has formed in it is thoroughly incorporated with the liquid. Now add very cautiously just *sufficient* Water of Ammonia to dissolve the precipitate. Evaporate the liquid, in a porcelain vessel, to the consistence of thick syrup, and spread it upon plates of glass or porcelain, so that the salt when dry may be obtained in scales.

Char.—Transparent garnet-red scales of a slightly sweetish taste, soluble in half their weight of cold water, and but little deliquescent. It is neutral to test-paper and is not precipitated at common temperatures by potassa, soda, or ammonia, nor rendered blue by ferrocyanide of potassium. On adding caustic potassa to the powdered scales, and moistening, the odor of ammonia is evolved.

¶ Mr. J. U. Lloyd's formula directs only 9 parts of Solution of Tersulphate of Iron to 4 of Cream of Tartar. As he himself says, about 20% of the latter are in excess. Nevertheless he seems to find these proportions to work well, especially on a large scale, as the residue from one operation can be utilized in the next. The quantity of the Solution of Tersulphate of Iron has been increased to more usual proportions. The addition of ammonia, even as much as 15%, is very commonly practised, and even sanctioned by such authorities as Hager. The latter directs 300 parts Sol. Tersulph. Iron (spec. gr. 1,317), 80 parts Bitart. of Potass., free from lime, and 15 parts Water of Ammonia, etc. According to Mr. Lloyd, the amount of ammonia really required is very small, and is not likely to interfere with the therapeutical properties of the salt.

Ferri et Quiniæ Citras (*a*). *Citrate of Iron and Quinia.*

Take of Solution of Tersulphate of Iron *thirty-nine parts* . . . 39
Sulphate of Quinia, *five parts* 5
Citric Acid, *fifteen parts* 15
Water of Ammonia, *a sufficient quantity* . . . . q. s.
Distilled Water, *a sufficient quantity* . . . . . q. s.
Water, *a sufficient quantity* . . . . . q. s.

Mix Water of Ammonia, *thirty-one parts* 31

with cold Water, *eighty parts* 80
and add to the mixture, under constant stirring, the solution of Tersulphate of Iron, previously diluted with cold Water, *four hundred parts* . 400
Pour the whole on a wet muslin strainer, allow the precipitate to drain, then return it to the vessel, and mix it intimately with cold
Water, *five hundred parts* 500
Again drain it on the strainer, and repeat the operation once more. Then allow the excess of Water to drain off. Dissolve the Sulphate of Quinia
in Water, *forty parts* 40
with the aid of sufficient Diluted Sulphuric Acid, and precipitate the alkaloid by the addition of Water of Ammonia in slight excess. Wash the precipitated quinia, on a filter, with cold Water *one hundred parts* . 100
Dissolve the Citric Acid in Distilled Water, *forty parts* 40
and, having placed the vessel on a water-bath, add the moist hydrated oxide of iron, and when this is dissolved, the precipitated quinia. When the solution is complete, add to it in small quantities at a time
Water of Ammonia, *seven parts* 7
previously diluted with Distilled Water, *ten parts* 10
stirring briskly, and waiting after each addition until the quinia which has separated is again dissolved. Then filter the solution, evaporate it to a syrupy consistence, and spread it on plates of glass or porcelain, so that the salt when dry may be obtained in scales.

¶ The formula of the present U. S. Ph. yields a product which is found much fault with on account of its difficult solubility. Hence the above formula is recommended, which is constructed on the basis of that of the Brit. Ph., with some improvements in manipulation. The exact proportions, by weight, of the important constituents of the Brit. Ph. are: Solution of Tersulphate of Iron, 3,534 grains; Sulphate of Quinia, 437.5 grains; Citric Acid, 1,312 grains; Water of Ammonia (to be added last), 633 grains. The proportions in the above formula will yield a practically identical product. The following formula is contributed by Mr. B. F. McIntyre, of New York.

Ferri et Quiniæ Citras (*b*). *Citrate of Iron and Quinia.*

Take of Solution of Tersulphate of Iron, *three hundred and sixty parts* 360
Water of Ammonia, spec. gr. 0.934, *two hundred and thirty-two parts* 232
Citric Acid, in crystals, *one hundred and twenty-eight parts* 128
Sulphate of Quinia, *twenty-seven parts* 27
Water, *a sufficient quantity* . . . . . q. s.

To the Solution of Tersulphate of Iron, mixed with
Water, *seven hundred and twenty parts* 720
add, in small portions at a time, and constantly stirring,
Water of Ammonia (spec. gr. 0.934), *one hundred and eighty-six parts* . 186
To the mixture containing the precipitated oxide of iron add enough
Water to make the whole weigh *two thousand parts* 2000
and mix thoroughly. Let it stand until the oxide of iron has subsided,

then decant or siphon off the clear supernatant liquid, and add a fresh portion of water. Repeat this process until the washings come off nearly tasteless; then pour the whole upon a wet muslin strainer and allow the precipitate to drain until water ceases to drop from it. Remove it from the strainer into a porcelain dish and add to it Citric Acid, *eighty parts* . 80
Stir the mixture until the oxide is dissolved; then evaporate the solution at a temperature not exceeding 60° C. (=140° F.), until it has a specific gravity of 1.250. Dissolve the remainder of the Citric Acid, namely *forty-eight parts* 48
in the solution of citrate of iron, without further heating, and add the Sulphate of Quinia. When the latter is dissolved, and the solution has cooled to the ordinary temperature, add, under constant stirring, and in small portions at a time,
Water of Ammonia, spec. grav. 0.934, *forty-six parts* 46
waiting after each addition, until the precipitated quinia has redissolved. Filter the solution, and evaporate it at a temperature not exceeding 60° C. (=140° F.) until it has a spec. grav. of 1.360. Finally spread it on glass or porcelain plates, and dry it with a gentle heat, so that the salt may be obtained in scales.
The product should weigh *one hundred and ninety-two parts* . . . 192

Proposed Test of Citrate of Iron and Quinia.

(By Prof. Alb. B. Prescott.)

Dissolve a weighed quantity, of about 4 grams of the scales, in a sufficient quantity of distilled water, by the aid of heat. When cool, transfer the solution to a glass separator, rinsing the dish; add a water solution of about ½ gram of tartaric acid, then add solution of soda in decided excess; and extract the alkaloid with three or four portions of water-washed chloroform. Each portion of the chloroform, of about 15 cc., to be well shaken with the solution. Set the mixture aside for an hour, or until separation is complete, and then draw off the chloroform solution. Evaporate the chloroform solution in a weighed dish, and dry the residue at 100° C. The residue should weigh from —— to —— per cent of the weight of the scales taken. On treating this residue with thirty to forty times its weight of water-washed ether, it should dissolve with little or no residuum.

The tartaric acid prevents precipitation of ferric hydrate, an interference with the separation of the chloroform layer. As to the results by chloroform extraction, see report of Mr. A. N. Palmer,† and of the present writer in 1877.‡ As to the percentage of quinia, dried at 100° C., which ought to be required, I have no other information than I have indicated in my report just referred to,§ from determination, and from calculation with allowance for

† Phar. Jour. and Trans. [3], vii. 89 (July 29th, 1876); Pro. Am. Phar. Asso., 1877, xxv., 302. See, also, Allen: Phar. Jour. and Trans. [3], vi. 964 (June 3d, 1876).

‡ Am. Jour. Phar., xlix., 484 (Oct, 1877); Pro. Am. Phar. Asso., 1878, xxvi., 574.

§ Am. Jour. Phar., xlix., 486; Pro. Am. Phar. Asso., 1878, 574.

water found, as the mean of that in five samples. The water varied from 6.8 to 12.5 per cent. The quinia percentage will be varied by the water, and will range from 12 to 15 per cent, in faithfully made lots. Say "about 12 to 13 per cent."

Ferri et Strychniæ Citras. *Citrate of Iron and Strychnia.*

Take of	Citrate of Iron and Ammonium, *ninety-eight parts*	98
	Strychnia, *one part*	1
	Citric Acid, *one part*	1
	Distilled Water, *one hundred and twenty parts*	120

Dissolve the Citrate of Iron and Ammonium in Water, *one hundred parts* 100
and the Strychnia together with the Citric Acid in Water, *twenty parts* 20
Mix the two solutions, evaporate the mixture by means of a water-bath, at a temperature not exceeding 60° C. (= 140° F.) to the consistence of thick syrup, and spread it upon plates of glass or porcelain, so that, when dry, the salt may be obtained in scales.

¶ Contains 1% of Strychnia, as now.

Ferri Ferrocyanidum (*d*).—**Ferri Hypophosphis.**

Ferri Iodidum * Saccharatum. *Saccharated Iodide of Iron.*

Take of	Iodine, *sixteen parts*	16
	Iron, in the form of fine wire, and cut into small pieces, *five parts*	5
	Distilled Water, *twenty parts*	20
	Sugar of Milk, in fine powder, *eighty parts*	80

Mix the Iodine, Iron wire and Distilled Water in a flask of thin glass, shake the mixture occasionally until the reaction ceases, and the solution has acquired a green color and lost the smell of Iodine. Then filter it through a wetted filter into a porcelain capsule, containing the Sugar of Milk, add a little Distilled Water through the filter, to wash the latter, and evaporate the contents of the capsule, on a water-bath, under constant stirring, until a dry mass remains. Lastly, reduce this to powder, and preserve it in small well-closed vials, protected from the light.

Char.—A yellowish-white powder, containing 20 per cent of ferrous iodide, and soluble in 7 parts of water, forming almost a clear solution. The aqueous solution, mixed first with starch, and then cautiously with chlorine water, is colored deep blue.

¶ This is proposed as a substitute for the present *Ferri Iodidum*, which does not keep well.

Ferri Lactas.—**Ferri Oxalas** (*d*).

Ferri Oxidum Hydratum. *Hydrated Oxide of Iron.*

Take of	Solution of Tersulphate of Iron, *ten parts*	10
	Water of Ammonia, *eight parts*	8
	Cold Water, *a sufficient quantity*	q. s.

To the Water of Ammonia, previously diluted with cold Water, *twenty parts* 20
add, under constant stirring, the Solution of Tersulphate of Iron, previously diluted with cold Water, *one hundred parts* 100
Pour the whole on a wet muslin strainer, allow the precipitate to drain, then return it to the vessel, and mix it intimately with cold Water, *one hundred and twenty parts* 120

Again drain it on the strainer, and repeat the operation once more.

Lastly, mix the precipitate with sufficient cold Water to make the mixture weigh *twenty parts* 20
and transfer it to a wide-mouthed bottle which must be securely stopped.

When *Hydrated Oxide of Iron* is to be made in haste for use as an antidote, the washing may be performed more quickly, though less perfectly, by pressing the strainer forcibly with the hands until no more liquid passes, and then adding sufficient water to make the whole weigh about *twenty parts* 20

N.B.—The ingredients for preparing Hydrated Oxide of Iron, as an antidote, should always be kept on hand, in a special place, in bottles holding respectively about 300 grammes (or 10 troy ℥) of the Solution of Tersulphate of Iron, and 240 grammes (or 8 troy ℥) of Water of Ammonia.

Char.—Hydrated Oxide of Iron is wholly soluble in hydrochloric acid without effervescence. If dried at a temperature not exceeding 82° C. (or 180° F.), it will afterwards lose, on exposure to a red heat, 18% of water.

¶ The first part of this formula is based on the suggestion of Mr. J. U. Lloyd.

Ferri Phosphas. *Phosphate of Iron.*

¶ If the following should be introduced in addition, it would be necessary to qualify this salt by an adjective, perhaps: *cærulea* (blue), or *subcærulea* (bluish, pale-blue).

*** Ferri Phosphas Alba.** *White Phosphate of Iron.*

Take of	Solution of Chloride of Iron, *sixteen parts*	16
	Phosphate of Sodium, *nineteen parts*	19
	Water, *a sufficient quantity*	q. s.

Dissolve the Phosphate of Sodium in Water, *two hundred parts* 200
and add to the solution gradually, and under constant stirring, the Solution of Chloride of Iron, previously mixed with Water, *one hundred parts* 100

Wash the precipitated Phosphate of Iron, first by repeated decantation with warm Water, using each time about *four hundred parts* . . . . 400 then transfer it to a muslin strainer, and continue the washing with Water, until the latter runs off tasteless. Allow the precipitate to drain, then spread it out in a thin layer on the strainer, or on bibulous paper, and dry it by exposure to warm air.

¶ When solutions of phosphate of sodium and chloride of iron are mixed, some free hydrochloric acid is formed, which is usually avoided by the addition of a corresponding amount of acetate of sodium. The latter sets free acetic acid, and combines with the hydrochloric acid. The proportions, in the present case, would be: Solution of Chloride of Iron, 160 parts; Phosph. of Sodium, 130 parts; Acetate of Sodium, 50 parts (both of the latter somewhat in excess). In practice, however, the writer has found the formula above given, to yield a nicer and whiter product.

This salt is proposed to be used in *Syr. Phosphatum Co.*, and in *Syr. Ferri Quiniæ et Strychniæ Phosph.* (see these). The above formula yields about 100 parts of ferric phosphate.

Ferri Pyrophosphas. *Pyrophosphate of Iron.*

Take of	Phosphate of Sodium, *thirty parts*	30
	Solution of Tersulphate of Iron, *thirty-five parts* . . .	35
	or *a sufficient quantity*	q. s.
	Citric Acid, *eight parts*	8
	Water of Ammonia, *twenty parts*	20
	or *a sufficient quantity*	q. s.
	Water, *a sufficient quantity*	q. s.

Heat the Phosphate of Sodium, in a porcelain capsule, until it undergoes the watery fusion, and continue the heat until it becomes dry. Transfer the dry salt to a shallow iron capsule, and heat it to incipient redness, without fusion. Then dissolve it in
Water, *one hundred and eighty parts* 180
with the aid of heat and, having filtered the solution and cooled it to the temperature of 10° C. (=50° F.), add the solution of Tersulphate of Iron, previously mixed with cold Water, *one hundred parts* . . . . . 100 until it ceases to produce a precipitate. Stir the mixture thoroughly, and pour it upon a muslin strainer, and, when the precipitate is drained, wash it with Water, until the washings pass nearly tasteless. Then transfer it to a tared porcelain capsule.

To the Citric Acid, contained in a suitable vessel, add the Water of Ammonia until the latter is present in slight excess, and the acid is dissolved. Then add the solution to the precipitate in the tared capsule, stir them together, and evaporate until the liquid is reduced to
eighty-four parts 84
Spread this on plates of glass or porcelain, so that the salt, when dry, may be obtained in scales. Lastly, preserve it in a well-stopped bottle, protected from the light.

¶ The slight alteration of the proportions of the ingredients will make a very

small difference in the percentage of anhydrous pyrophosphate of iron. This has not yet been determined for want of time. The formula of the present U. S. Ph., calculated into parts by weight, is as follows :

		Approximation.	
Phosph. Sodium	3,600 grs.	36	30
Sol. Tersulph. Iron	4,210 "	42	35
Citric Acid	960 "	10	8
Aq. Ammon.	2,461 "	24	20
Water	21,874 "	200	180
Reduce to	7,680 "		84

The *Germ. Pharm. Rep.* gives the following characteristics : Yellowish-green, transparent scales, of mild saline taste, soluble in twice their weight of water. The solution of 1 part in 200 parts of water is nicely yellow, almost tasteless, and has no reaction on litmus paper. On addition of ammonia it turns brown, but remains clear; on warming now with solution of soda, hydrated oxide of iron precipitates, while ammonia escapes. Neither ferri- nor ferrocyanide of potassium produce precipitates in a solution of the salt ; but in presence of the last-named (*not* the ferri °) reagent, on addition of hydrochloric acid, Prussian blue is formed. Solution of sulphuretted hydrogen, on being mixed with a solution of 1 of the salt in 200 parts of water, at first does not produce any change, but shortly afterwards colors the mixture black. If some of the powdered scales are sprinkled on sulphuric acid, of spec. gr., 1.880, the latter should neither effervesce nor assume a darker color. It must be carefully protected from the light.

Ferri Subcarbonas.—Ferri Sulphas.

Ferri Sulphas Exsiccata. *Exsiccated, or Dried Sulphate of Iron.*

Take of Sulphate of Iron, in coarse powder, *a convenient quantity, q. s.*

Expose it, in an unglazed earthen vessel, to a moderate heat, with occasional stirring until it has effloresced ; then increase the heat to 149° C. (= 300° F.), and maintain it at about that temperature until the salt ceases to lose weight. Lastly, reduce the residue to fine powder, and keep it in a well-stopped bottle.

Char.—Dried Sulphate of Iron is a grayish-white powder, soluble in water with the exception of a small residue, and corresponding in chemical properties to sulphate of iron. 61 parts of it correspond to 100 parts of crystallized sulphate of iron.

Ferri Sulphuretum (see note to *Calcii Sulphuretum.*)**—Ferrum.—Ferrum Reductum.**

¶ Although the verb *redigo* (from which comes the participle *redactus*) has the meaning "to bring to, to reduce to," etc.; yet it is hardly ever so used, unless the condition, *to which* something or somebody is reduced, is added. The chemical term "reduced," standing by itself in the sense in which we use it, is better expressed by *reductus, a, um*, from *reduco*, to lead back, to reduce, etc. Hence it is proposed to alter the present *Ferrum Redactum* to *Ferrum Reductum*, as it is termed in the Germ. Pharm.

The *Germ. Pharm. Rep.* adds to the latter : After digesting 0.5 gm. of Reduced Iron with a solution of 1.1 gm. of iodine, and 1.1 gm. of iodide of potassium in 25 gm. of distilled water for 2 hours, the solution should not contain any more free iodine. One part of Reduced Iron is soluble in 25 parts of solution of chloride of iron, spec. gr. 1.300. The Committee adds that "it would be much better to drop the Reduced Iron altogether, as *Powdered Iron* may now be obtained of great purity."

Ficus.—Filix Mas.

¶ Perhaps some allied species of *Aspidium*, besides the *Filix Mas*, should be recognized. See paper by Prof. Maisch in *Am. Journ. Pharm.*, June, 1878, and *National Dispensatory* [2], 656.

Fœniculum.—* Frangula.—Frasera.—* Fucus (*F. vesiculosus* L.).**—Galbanum. —Galla.—Gambogia.**

*** Gargarisma[ta].** *Gargle[s].*

¶ The California College of Pharmacy and California Pharmaceutical Society suggest the introduction of a few standard formulæ for gargles.

*** Gelatina.** *Gelatin.*

Char.—A peculiar nitrogenized substance, without taste or odor, obtained from animal tissues, swelling up in cold water, freely soluble in hot water, forming, when cool, a transparent, tremulous jelly. It is insoluble in alcohol and ether. It is precipitated from its aqueous solution by tannic acid.

For pharmaceutical purposes, the purest commercial varieties alone should be used.

¶ See *Sericum Gelatinæ*.

Gelsemium —Gentiana.—Gentiana Catesbæi.—Geranium.—Geum.—Gillenia.

Glycerinum. *Glycerin.*

¶ The termination in *-um* is preferable to that in *-a*. The *Germ. Pharm. Rep.* says: The spec. grav. is to be fixed at 1.230; glycerin containing 10% of water has a spec. gr. of 1.237; with only 5% of water, a spec. gr. of 1.250. In practice it is preferable to employ glycerin containing 10% of water. Sugar is most readily detected by heating glycerin to boiling in a platinum capsule, and then igniting it. Pure glycerin burns without residue; if sugar is present, a good deal of carbon would remain. Butyric acid is shown to be present by an acid reaction of the glycerin, and may be extracted with ether. Since even the purest glycerin reduces nitrate of silver, particularly on warming, this reagent is not suitable; at least, it should not be used together with ammonia [as the Germ. Pharm. directs]. Glycerin is soluble in a mixture of 1 part of ether and 3 parts of alcohol. A test for nitric acid is superfluous, since this acid is no longer used for purifying crude glycerin.

Glyceritum Acidi Carbolici. *Glycerite of Carbolic Acid.*

Take of	Carbolic Acid, *one part*	1
	Glycerin, *five parts*	5

Weigh the glycerin into a tared bottle of proper capacity; then weigh into it the Carbolic Acid, previously melted by a gentle heat, and mix them.

¶ The present U. S. Ph. directs 2 ʒ Carbol. Acid, and 8 fl. ʒ of Glycerin. The product contains therefore, by weight, 1 part of Acid in 4.75 parts.

Glyceritum Acidi Gallici. *Glycerite of Gallic Acid.*

Take of	Gallic Acid, *one part*	1
	Glycerin, *five parts*	5

Rub them together in a mortar; then transfer to a glass or porcelain capsule, avoiding contact of metals, and heat gently until the Acid is dissolved.

¶ The present strength is 1 part of Acid in 4.75 parts.

Glyceritum Acidi Tannici. *Glycerite of Tannic Acid.*

Take of	Tannic Acid, *one part*	1
	Glycerin, *five parts*	5

Rub them together in a mortar; then transfer to a glass or porcelain capsule, avoiding contact of metals, and heat gently until the Acid is dissolved.

¶ The present strength is 1 of acid in 4.75 parts.

*** Glyceritum Amyli.** *Glycerite of Starch.*

Take of	Starch, *one part*	1
	Glycerin, *nine parts*	9

Rub them together in a mortar until they are intimately mixed. Then transfer the mixture to a porcelain capsule, and apply a heat, gradually raised to 140° C. (=284° F.) and not exceeding 144° C. (=291° F.), constantly stirring, until the starch granules are completely dissolved, and a translucent jelly is formed.

¶ This is Mr. Lloyd's improved formula (see *New Remedies*, 1879, p. 200). The title of *Glyceritum Amyli* is preferable to that of *Mucilago Amyli*, as it is called in the Br. Ph., where the proportions are nearly the same.

Glyceritum Picis Liquidæ. *Glycerite of Tar.*

Take of	Tar, *one part*	1
	Starch, *one part*	1
	Glycerin, *nine parts*	9

Rub the Starch and Glycerin together in a mortar until they are intimately mixed. Then transfer the mixture to a porcelain capsule, and apply a heat, gradually raised to 140° C. (=284° F.) and not exceeding 144° C. (=291° F.), constantly stirring, until the starch granules are completely dissolved, and a translucent jelly is formed. Then allow it to cool to 65° C. (=149° F.), add the tar, and incorporate it thoroughly.

¶ This is Mr. Lloyd's improved formula (see *New Remedies*, 1879, p. 200).

Glyceritum Sodii Boratis. *Glycerite of Borate of Sodium.*

Take of	Borate of Sodium, *one part*	1
	Glycerin, *five parts*	5

Rub them together in a mortar until the Borate of Sodium is dissolved.

¶ The present strength is 1 of acid in 4.75 parts.

*** Glyceritum Vitelli.** *Glycerite of Yolk of Egg. Glyconin.*

Take of Fresh Yolk of Egg, *four parts* 4
Glycerin, *five parts* 5

Beat or whip the Yolk of Egg in the usual manner, pour the liquid into a bottle, add the Glycerin, and shake them well to ether.

¶ There can be no question about the utility of this preparation for making emulsions of cod-liver oil It should be introduced.

Glycyrrhiza. *Liquorice. Liquorice Root.*

¶ As remarked under "Extr. Glyc.," consistence in nomenclature requires that "Liquorice" should, at least in the Pharmacopœia, denote liquorice *root*. The previous editions of the U. S. Dispensatory, and other books, usually felt compelled to add the words "extract" or "root" in brackets, in order to prevent confusion. If it is thought that the confusion might still partially continue, it would be advisable to call the above "Liquorice Root," and the extract "Extract of Liquorice."

*** Glycyrrhizinum (?).—Gossypii Radicis Cortex.—Gossypium.—Granati Fructus Cortex.—Granati Radicis Cortex.**

*** Grindelia.** *Grindelia.*

¶ It is left an open question whether both *Grindelia robusta* Nutt., and *Grindelia squarrosa* Dunal, or only one, or neither, should be introduced in the U. S. Ph. If only *one* is introduced, the above title would be sufficient; if more than one, the species name would have to be added.

Guaiaci Lignum.—Guaiaci Resina.—* Guarana.—Guttapercha.—Hæmatoxylon.—Hamamelis.—Hedeoma (*d*).—Helianthemum.—Helleborus.—Hepatica (*d*).—Heuchera.—*Hirudo.—Hordeum.—Humulus.—Hydrargyri Chloridum Corrosivum.—Hydrargyri Chloridum Mite.—Hydrargyri Cyanidum.—Hydrargyri Iodidum Rubrum.

Hydrargyri Iodidum Viride. *Green Iodide of Mercury.*

Take of Mercury, *eight parts* 8
Iodine, *five parts* 5
Alcohol ("Strong. Alc."), *a sufficient quantity* . . . q. s.

Into a cold mortar pour Alcohol, *three parts* . . . . . 3 then add the Mercury and Iodine, and triturate the mixture until the ingredients are thoroughly incorporated, etc.

¶ The remainder of the formula may be left as it is now. The change in manipulation has been suggested by Mr. J. U. Lloyd (see *New Rem.*, 1879, 199), in order to prevent the trituration of the mercury and iodine before the alcohol is added. The *Germ. Pharm. Rep.* adds: The compound may be washed, without hesitation, with alcohol at 50-60° C. (=122-140° F.). The residue may be dried without injury, at temperatures up to 200° C. (=392° F.). Warm alcohol may also be used to detect any red iodide present.

Hydrargyri Oxidum Flavum. *Yellow Oxide of Mercury.*

Take of	Corrosive Chloride of Mercury, *four parts*	4
	Solution of Potassa, *twenty-five parts*	25
	Distilled Water, *a sufficient quantity*	q. s.

Dissolve the Corrosive Chloride of Mercury in Distilled Water, *seventy-five parts* 75
and pour it, under constant stirring, into the Solution of Potassa, previously mixed with Distilled Water, *fifty parts* 50
After the precipitate has subsided, pour off the supernatant liquid, and wash with distilled water until the washings cease to be affected by a solution of nitrate of silver. Then dry the precipitate on bibulous paper, in a dark place, and preserve it in bottles protected from the light.

¶ The process is somewhat improved, first by increasing the amount of solution of potassa, and then by directing the mercury solution to be poured into the latter, in order to prevent the formation of oxychloride.

Hydrargyri Oxidum Rubrum.—Hydrargyri Sulphas Flava.—Hydrargyri Sulphuretum (better *-idum*) **Rubrum.—Hydrargyrum.**

Hydrargyrum Ammoniatum. *Ammoniated Mercury. White Precipitate.*

Take of	Corrosive Chloride of Mercury, *ten parts*	10
	Water of Ammonia, *a sufficient quantity*	q. s.
	Distilled Water, *a sufficient quantity*	q. s.

Dissolve the Corrosive Chloride of Mercury in warm Distilled Water, *two hundred parts* 200
allow the solution to cool and filter. Then pour it gradually, and under constant stirring, into Water of Ammonia, *fifteen parts* 15
taking care that the ammonia shall remain in slight excess. Transfer the precipitate to a filter, allow the liquid to drain from it as much as possible, then wash it twice with Distilled Water, *twenty parts* . . 20
previously mixed with Water of Ammonia, *one part* 1
and finally dry it in a moderately warm place, protected from the light.

¶ The present U. S. Ph. process is faulty in directing the ammonia to be poured into the solution of chloride of mercury; and in continuing the washing with water until the latter is nearly tasteless. Long washing alters the constitution of the precipitate; deficient washing leaves a small amount of chloride of ammonium in the salt, which can do no harm, and does not interfere with its action. The process given is that of Hager.

Hydrargyrum cum Creta. *Mercury with Chalk.*

Take of	Mercury, *three parts*	3
	Sugar of Milk, *one part*	1
	Prepared Chalk, *four parts*	4
	Ether, *a sufficient quantity*	q. s.
	Alcohol, *a sufficient quantity*	q. s.

Mix the Mercury, Sugar of Milk, and about one-fourth of the Chalk in a mortar of a shape suitable for trituration; moisten the mass with a mixture of *equal parts* of Ether and Alcohol, and triturate it briskly. Gradually add the remainder of the Chalk, dampen the whole occasionally with the mixture of Ether and Alcohol, and continue the trituration, until globules of mercury are no longer visible under a magnifying power of 10 [?] diameters, and the powder is of a uniform gray color, and dry.

¶ Mr. Bibby suggested the use of sugar of milk; the method of dampening occasionally with ether and alcohol is thought to be an additional improvement. The process of "succussion" is unsuited to working on a small scale.

Hydrastis.—Hyoscyami Folia.—Hyoscyami Semen.—*Hyoscyamia (cryst.). **Ichthyocolla.—Ignatia.—*Illicium.**

Infusa. *Infusions.*

Infusions, the strength of which is not specified by the physician, nor directed by the Pharmacopœia, are to be prepared by the following formula:

Take of The Substance, in a moderately coarse condition, *one part* . 1

Put it into a suitable vessel, provided with cover, pour upon it Boiling Water, *ten parts* 10
cover the vessel tightly, and let it stand two hours to cool. Then strain, and pass enough cold Water through the strainer to obtain *ten parts* . . 10

Caution.—The strength of infusions of energetic or powerful substances should be specially prescribed by the physician.

¶ Of the infusions, which are at present officinal, the following have been omitted, as being better made by the general rule: Infus. Buchu, Cascarillæ, Eupatorii, Juniperi, Taraxaci.

Instead of two processes for Cinchona, *one* general formula was introduced.

The following are newly introduced: Infus. Brayeræ, Sennæ Comp., Spigeliæ Comp.

The proportions of the ingredients in the formulæ of the infusions at present officinal have been preserved, unless the contrary is stated.

Infusum Angusturæ. *Infusion of Angustura.*

Take of Angustura, in moderately coarse powder, *one part* . . 1
Water, *a sufficient quantity* . . . . . q. s.

Moisten the powder with a sufficient quantity of Water, pack it firmly in a conical percolator, and gradually pour Water upon it, until the percolate weighs *thirty parts* 30

Or: Pour upon
Angustura, in moderately coarse powder, *one part* . . 1
Boiling Water, *thirty parts* 30

Macerate for 2 hours, strain, and pass enough cold Water through the strainer to obtain *thirty parts* 30

Infusum Anthemidis. *Infusion of Chamomile.*

Take of	Chamomile, *one part*	1
	Boiling Water, *thirty parts*	30
	Water, *a sufficient quantity*	q. s.

Pour the Boiling Water on the Chamomile, macerate for 10 minutes in a covered vessel, strain, and pass enough cold water through the strainer to obtain *thirty parts* 30

*** Infusum Brayeræ.** *Infusion of Kousso.*

Take of	Kousso, in coarse powder, *one part*	1
	Boiling Water, *fifteen parts*	15

Macerate for 15 minutes in a covered vessel. Dispense without straining.

¶ This should be introduced on account of the necessity of directing *not* to strain.

Infusum Calumbæ. *Infusion of Colombo.*

Take of	Colombo, in moderately coarse powder, *one part*	1
	Water, *a sufficient quantity*	q. s.

Moisten the powder with a sufficient quantity of Water, pack it firmly in a conical percolator, and gradually pour Water upon it until the percolate weighs *thirty parts* 30

¶ The proportions are as at present. The other directions of the present U. S. Ph., namely to heat the percolate to boiling, and to strain when cold, as well as the alternative process, namely to pour boiling water on the Colombo, should not be adopted, as they result in unsightly or inferior preparations.

Infusum Capsici. *Infusion of Capsicum.*

Take of	Capsicum, in coarse powder, *one part*	1
	Boiling Water, *thirty parts*	30
	Water, *a sufficient quantity*	q. s.

Pour the Boiling Water on the Capsicum, macerate for two hours in a covered vessel, strain, and pass enough cold Water through the strainer to obtain *thirty parts* 30

Infusum Caryophylli (*d*). *Infusion of Cloves.*

Take of	Cloves, bruised, *one part*	1
	Boiling Water, *fifty parts*	50

Macerate for two hours, in covered vessel, and strain.

¶ The present strength is 1 in 60. This had better be made 1 in 50, as above. Since the cloves retain but a small quantity of the Water, it will not be worth while to wash the residue, so as to obtain exactly 50 parts.

Infusum Catechu Compositum. *Compound Infusion of Catechu.*

Take of	Catechu, in coarse powder, *three parts*	3
	Cinnamon, in coarse powder, *one part*	1
	Boiling Water, *one hundred parts*	100

Macerate for an hour, in a covered vessel, and strain.

¶ The residue is so small that it will not be worth while to wash with water to get exactly 100 parts.

*** Infusum Cinchonæ.** *Infusion of Cinchona.*

Take of	Cinchona, in moderately fine powder, *six parts*	6
	Aromatic Sulphuric Acid, *one part*	1
	Water, *a sufficient quantity*	q. s.

Mix the Acid with Water, *fifty parts* 50

Moisten the powder with one-half its weight of the mixture, and, having packed it firmly in a conical glass percolator, gradually pour upon it the remainder of the mixture, and afterwards Water, until the percolate weighs *one hundred parts* 100

N. B.—When Infusion of Cinchona is ordered, use that variety of Cinchona which may be directed by the physician. When no variety is specified, use Yellow Cinchona.

¶ The remarks at the end not only save several formulæ, for the different kinds of bark, but give instructions which have been much needed, as physicians often merely write "Infusum Cinchonæ," and this order is differently interpreted by different dispensers.

As to the proportions, the present formula requires:

			Approximation.
Bark	1 ʒ	83	6
Arom. Sulp. Acid	1 fl. ʒ	about 13	1
Water, q. s.	16 fl. ʒ	about 121 3	100

Infusum Digitalis. *Infusion of Digitalis.*

Take of	Digitalis, in coarse powder, *one part*	1
	Cinnamon, in coarse powder, *one part*	1
	Boiling Water, *sixty-four parts*	64
	Water, *a sufficient quantity*	q. s.

Upon the Digitalis and Cinnamon, contained in a suitable vessel, pour the Boiling Water, and macerate for two hours; then strain, and, if necessary, pass enough Water through the strainer to obtain *sixty-four parts* 64

¶ The formula of the present U. S. Ph. requires 1 ʒ of Digitalis to be infused with 8 fl. ʒ of Boiling Water, and after straining, 1 fl. ʒ of Tr. Cinnamon to be added.

The amount of liquid obtained, when cold, by straining and expressing, was found by a number of experiments to be on an average 7 fl. ʒ and 320 minims, or 227 CC. On adding the Tincture of Cinnamon, this is increased to 8 fl. ʒ and 320 minims. The

weight of this is only a trifle over 8 troy ounces. Hence the above proportions are almost identical with the present formula.

The substitution of Cinnamon for the Tinct. of Cinnamon will be found an improvement of the process.

Infusum Gentianæ Compositum. *Compound Infusion of Gentian.*

Take of	Gentian, in moderately coarse powder, *three parts*	3
	Bitter Orange Peel, in mod. coarse powder, *one part*	1
	Coriander, in moderately coarse powder, *one part*	1
	Alcohol ("Stronger Alc."), *twelve parts*	12
	Water, *a sufficient quantity*	q. s.

Mix the Alcohol with Water, *one hundred parts* 100
and, having moistened the mixed powders with *three parts* of the menstruum, pack them firmly in a conical percolator, and gradually pour upon them the remainder of the menstruum, and afterwards, if necessary, Water, until the percolate weighs *one hundred parts* 100

The present formula is:

		In Weight.	Approximations.	
Gentian	4 ℥	4 ℥	4	3
Orange P.	1 ℥	1 ℥	1	1
Coriander	1 ℥	1 ℥	1	1
Alcohol	2 fl. ℥	12½ ℥	12	12
Water	14 fl. ℥	106 ℥	100	100
Total Product	16 fl. ℥	about 128 ℥	128	100

As will be seen from the approximations, the new formula is nearly the same, so far as the Gentian is concerned; the aromatics are a trifle higher, as no fractions of a part could be used. But the product is as near the former preparation as practicable.

Infusum Humuli. *Infusion of Hops.*

Take of	Hops, *one part*	1
	Boiling Water, *thirty parts*	30
	Water, *a sufficient quantity*	q. s.

Pour the Boiling Water on the Hops, macerate for two hours in a covered vessel, strain, and pass enough cold Water through the strainer to obtain *thirty parts* 30

Infusum Krameriæ. *Infusion of Rhatany.*

Take of	Rhatany, in moderately coarse powder, *two parts*	2
	Water, *a sufficient quantity*	q. s.

Moisten the powder with half its weight of Water, and, having packed it firmly in a conical glass percolator, gradually pour Water upon it, until the percolate weighs *thirty parts* 30

¶ Proportions are nearly the same as at present.

Infusum Lini Compositum. *Compound Infusion of Flaxseed.*

Take of	Flaxseed, *two parts*	2
	Liquorice Root, bruised, *one part*	1
	Boiling Water, *thirty parts*	30

Macerate for two hours, in a covered vessel, and strain.

Infusum Picis Liquidæ. *Infusion of Tar.*

Take of	Tar, *one part*	1
	Cold Water, *two parts*	2
	Boiling Water, *ten parts*	10

Upon the tar, contained in a suitable vessel, pour the cold Water, and stir the mixture frequently during 24 hours. Then pour off the water, and throw it away. Add the Boiling Water, and stir well for about fifteen minutes. Then set it aside for 36 hours, stir occasionally, and finally, when the sediment has subsided, pour off the clear liquid, and filter.

¶ The present process of the U. S. Ph. does not yield a satisfactory infusion. The first treatment with cold water generally abstracts acids and other undesirable substances, and hence should precede the real infusion. The above formula has been in use in Europe for a long time.

Infusum Pruni Virginianæ. *Infusion of Wild Cherry.*

Take of	Wild Cherry, in moderately fine powder, *one part*	1
	Water, *a sufficient quantity*	q. s.

Moisten the powder with *one and one-half times* its weight of water, and let it stand for one hour; then pack it firmly in a conical glass percolator, and gradually pour Water upon it until the percolate weighs *thirty parts* 30

Infusum Quassiæ. *Infusion of Quassia.*

Take of	Quassia, rasped, *one part*	1
	Water, *fifty parts*	50

Macerate for 12 hours in a covered vessel, and strain.

¶ The present strength is 1 in 64. There is so little loss of liquid that it will not be worth while to make up the bulk to 50 parts.

Infusum Rhei. *Infusion of Rhubarb.*

Take of	Rhubarb, bruised, *one part*	1
	Boiling Water, *thirty parts*	30

Digest for an hour in a covered vessel and strain.

Infusum Rosæ Compositum. *Compound Infusion of Rose.*

Take of	Red Rose, *two parts*	2
	Diluted Sulphuric Acid, *one part*	1
	Sugar, in coarse powder, *four parts*	4
	Boiling Water, *one hundred parts*	100

Pour the Boiling Water upon the Rose, in a glass or porcelain vessel provided with a cover, add the Acid, and macerate for half an hour; then dissolve the Sugar in the liquid, and strain. Pass enough Water through the strainer to obtain *one hundred parts* 100

¶ Present formula:

		In weight.	Approximations.	
Red Rose	4 ʒ	4 ʒ	1¼	2
Dil. Sulph. Acid	3 fl. ʒ	about 3 ʒ	1	1
Sugar	12 ʒ	12 ʒ	4	4
Boil. Water	40 fl. ʒ	about 300 ʒ	100	100

Infusum Salviæ. *Infusion of Sage.*

Take of	Sage, *one part*	1
	Boiling Water, *thirty parts*	30

Macerate for half an hour, in a covered vessel, and strain.

Infusum Sennæ. *Infusion of Senna.*

Take of	Senna, *eight parts*	8
	Coriander, bruised, *one part*	1
	Boiling Water, *one hundred parts*	100

Macerate, in a covered vessel, for half an hour, and strain.

¶ The present proportion is 8 in about 120. This has been altered to 8 in 100. The time of maceration has been shortened to half an hour.

***Infusum Sennæ Compositum.**

Compound Infusion of Senna. Black Draught.

Take of	Senna, *three parts*	3
	Manna, *six parts*	6
	Sulphate of Magnesium, *six parts*	6
	Fennel, bruised, *one part*	1
	Boiling Water, *fifty parts*	50
	Water, *a sufficient quantity*	q. s.

Upon the solid ingredients, contained in a suitable vessel, pour the Boiling Water, cover well, and allow to stand until cool. Then strain, and add enough Water through the strainer to obtain *fifty parts* . . 50

¶ Probably the most common formula followed in the Eastern States for making the so-called "Black Draught" is the following:

			Approximations.		
Senna . . .	4 ʒ	4	1	3	3
Manna . . .	8 ʒ	8	2	6	6
Sulph. Magnes. . . .	8 ʒ	8	2	6	6
Fennel . . .	1 ʒ	1	¼	¾	1
Boiling Water, 8 fl. ʒ,	about 64 ʒ	64	16	48	50

It will be seen that the change of proportions is insignificant.

Infusum Serpentariæ. *Infusion of Serpentaria.*

Take of Serpentaria, in moderately coarse powder, *one part* . . 1
Water, *a sufficient quantity* . . . . . q. s.

Moisten the powder with *one-fourth* of its weight of Water, pack it firmly in a conical percolator, and gradually pour Water upon it, until the percolate weighs *thirty parts* 30

Or: Take of
Serpentaria, in moderately coarse powder, *one part* . . 1
Boiling Water, *thirty parts* 30
Water, *a sufficient quantity* . . . . . q. s.

Pour the Boiling Water on the Serpentaria, macerate for two hours in a covered vessel, strain, and pass enough Water through the strainer to obtain *thirty parts* 30

Infusum Spigeliæ. *Infusion of Spigelia.*

Take of Spigelia, in moderately coarse powder, *one part* . . 1
Boiling Water, *thirty parts* 30

Macerate for two hours, in a covered vessel, and strain.

¶ Proportions as at present. The loss of liquid is very trifling, and need not be made up.

*** Infusum Spigeliæ Compositum.** *Compound Infusion of Spigelia.*

Take of Spigelia, in moderately coarse powder, *three parts* . . 3
Senna, *two parts* 2
Fennel, bruised, *two parts* 2
Manna, *six parts* 6
Boiling Water, *one hundred parts* 100
Water, *a sufficient quantity* . . . . . q. s.

Upon the solid ingredients, contained in a suitable vessel, pour the Boiling Water, cover well and macerate for two hours. Then strain and add enough cold Water through the strainer to obtain *one hundred parts* 100

N. B. There is a popular preparation known under the name of "Worm-Mixture" or "Worm-Tea," which is usually made as follows:

Spigelia	4	3	This becomes	4	1	3	3
Senna	2	3	in parts	2	½	1½	2
Fennel	2	3	by weight,	2	½	1½	2
Manna	8	3	and	8	2	6	6
Boil. Water . .	16 fl. ℥		rounded off :	128	32	96	100

Infusum Tabaci. *Infusion of Tobacco.*

Take of Tobacco, *four parts* 4
Boiling Water, *five hundred parts* 500

Macerate for two hours, in a covered vessel, and strain.

¶ Proportions nearly the same as at present.

Infusum Valerianæ. *Infusion of Valerian.*

Take of Valerian, in moderately coarse powder, *one part* . . 1
Water, *a sufficient quantity* . . . . . q. s.

Moisten the powder with half its weight of Water, pack it firmly in a conical percolator, and gradually pour Water upon it, until the percolate weighs *thirty parts* 30

Or : Take of
Valerian, in moderately coarse powder, *one part* . . 1
Boiling Water, *thirty parts* 30
Water, *a sufficient quantity* . . . . . q. s.

Upon the Valerian, in a suitable vessel, pour the Boiling Water, cover well and macerate for two hours. Then strain and pass enough cold Water through the strainer to obtain *thirty parts* 30

Infusum Zingiberis. *Infusion of Ginger.*

Take of Ginger, bruised, *one part* 1
Boiling Water, *thirty parts* 30

Macerate for two hours, in a covered vessel, and strain.

***Inhalatio[nes].** *Inhalation[s].*

¶ The California College of Pharmacy and Pharmaceutical Society recommend to introduce a few standard formulæ of solutions commonly used by inhalation.

Inula.

Iodinium. *Iodine.*

¶ The *Germ. Pharm. Rep.* adds: Iodine may be contaminated with cyanide of iodine, which is formed from the protein substances of the algæ. Water easily dissolves the cyanide of iodine. On adding to water, which has been agitated with a sample of iodine, some sulphuretted hydrogen water, then a dilute solution of ferrous sulphate, together with a trace of ferric chloride and caustic soda, and finally supersaturating with hydrochloric acid, after a short time Prussian blue is deposited, if cyanide of iodine was present.

Iodoformum. *Iodoform.*

¶ The *Germ. Pharm. Rep.* adds: It is but very slightly volatile with vapors of water. It is insoluble in water, easily soluble in chloroform, in 80 parts of cold, and about 10 parts of boiling alcohol, and in 20 parts of cold ether. Distilled water shaken with it is to be tested for iodide of potassium, hydrochloric and sulphuric acids.

Ipecacuanha. *Ipecacuanha.*

¶ Flückiger in *Pharmacographia* [2], 370, Note 1, says: I am informed by my friend Professor Müller, of Geneva, that, in describing the Rubiaceæ for the *Flora Brasiliensis*, he will include *Cephaëlis Ipecacuanha* in the genus *Mapouria*.

Iris Florentina.—Iris Versicolor.—Jalapa.

*** Jasminum.** *Jasmine.*

¶ The flowers of *Jasminum Sambac* Vahl, *J. officinale* L., *J. grandiflorum* L., and other species of *Jasminum*, natives of the East Indies, and cultivated chiefly in Southern France.—As source of *Adeps Jasmini*.

Juglans.—Juniperus.—Juniperus Virginiana.—* Kalmia.

¶ The introduction of the latter is advocated by the Committee of the California Pharm. Society and College of Pharmacy.

*** Kamala.** *Kamala.*

¶ It is proposed to use this term, which is universally understood, instead of *Rottlera*. The latter term was chosen from the former botanical name of the tree which produces it, viz., *Rottlera tinctoria* Roxb.; but modern authorities have altered the nomenclature, in consequence of a better study of the nat. fam. Euphorbiaceæ, and now place the tree under the genus *Mallotus*, as *Mallotus philippinensis* Mueller Arg.

Kino.—Krameria.—* Lactosum (Lactose).

¶ Suggested as an eventual title of powders, which are made by triturating active remedies with sugar of milk. See *Elaterinum*.

Lactucarium.—Lappa.—Lavandula.—Leptandra.—Limonis Cortex.—Limonis Succus.—Lini Farina.

Linimentum Aconiti. *Aconite Liniment.*

Take of	Aconite Root, in fine powder, *one hundred parts*	100
	Tartaric Acid, *one part*	1
	Alcohol ("Stronger Alc."), *a sufficient quantity*	q. s.

Moisten the powder with Alcohol, *fifty parts* 50
in which the Tartaric Acid had previously been dissolved, and macerate it for 24 hours. Then pack it firmly in a conical percolator, and gradually pour Alcohol upon it, until there have passed *ninety parts* . . . 90
Set this aside, and continue the percolation with Alcohol, until *one hundred parts more* 100

of percolate have been obtained. Evaporate this at a temperature not exceeding 49° C. (=120° F.) to *ten parts* 10
and mix it with the reserved portion.

¶ This preparation is really a Fluid Extract, but as it was not intended to be used internally, it was placed under the Liniments. The use of glycerin, as in the present U. S. Ph., is unnecessary; hence it was omitted. C. R. Alder Wright (*Journ. Chem. Soc.*, Feb., 1877, 143, and later) has shown that aconite is best deprived of its alkaloids by alcohol in presence of tartaric acid, 1 part of the latter for each 100 parts of the root. Accordingly, the U. S. Ph. process was modified accordingly. He has also shown that all excess of heat must be avoided. It is, therefore, unadvisable to distil off the alcohol from the percolate, as the U. S. Ph. directs. The 90 parts first reserved, according to the new formula proposed, contain practically the whole of the active constituents, and it may perhaps not even be necessary to collect as much as 100 parts more of percolate. But this second percolate should be concentrated at a low temperature. As heat is so injurious to aconite, the formula for *Emplastrum Aconiti* (see above) should be modified so as to do away with the distillation of the alcohol.

It would, perhaps, be advisable to dissolve *one part* of camphor in the alcohol used as a menstruum, first, because this addition will be beneficial in all cases where the external use of aconite is indicated, and second, because it will give a distinctive flavor to the preparation, so that it could not be mistaken for *Tincture* of Aconite.

Linimentum Ammoniæ. *Liniment of Ammonia.*

Take of Water of Ammonia, *one part* 1
Cotton-Seed Oil, *two parts* 2

Mix them.

¶ Cotton-seed Oil is proposed as a substitute for Olive Oil, as it makes a much nicer preparation, both in appearance and in odor, when applied to the skin.

Linimentum Calcis. *Lime Liniment.*

Take of Lime Water, *twelve parts* 12
Flaxseed Oil, *eleven parts* 11

Mix them.

¶ Proportion same as at present.

Linimentum Camphoræ. *Liniment of Camphor.*

Take of Camphor, *one part* 1
Cotton-Seed Oil, *four parts* 4

Dissolve the Camphor in the Oil.

¶ Cotton-Seed Oil is a much better solvent of camphor than Olive Oil, and the resulting product is by far preferable to, and nicer than that obtained with Olive Oil. Cotton-Seed Oil (refined) deserves a place in the U. S. Ph., and can be used to great advantage in many preparations.

Linimentum Cantharidis. *Liniment of Cantharides.*

Take of Cantharides, in fine powder, *one part* 1
Oil of Turpentine, *a sufficient quantity* . . . . . q. s.

Digest the Cantharides with Oil of Turpentine, *six parts* . . . 6
for 3 hours, in a close vessel, by means of a water-bath. Then strain and add enough Oil of Turpentine through the strainer to obtain *six parts* 6

¶ Proportions are about the same as at present.

Linimentum Chloroformi. *Liniment of Chloroform.*

Take of Commercial Chloroform, *three parts* 3
Cotton-Seed Oil, *four parts* 4

Mix them.

¶ Cotton-seed oil is substituted for olive oil, and commercial chloroform is directed to be used, instead of purified chloroform, as in the present U. S. Ph. Soap-liniment seems to be generally preferred to fatty oil in this preparation.

Linimentum Plumbi Subacetatis. *Liniment of Subacetate of Lead.*

Take of Olive Oil, *three parts* 3
Solution of Subacetate of Lead, *two parts* . . . 2

Mix them.

Linimentum Saponis. *Soap Liniment.*

Take of Soap, in shavings, *ten parts* 10
Camphor, *five parts* 5
Oil of Rosemary, *one part* 1
Water, *a sufficient quantity* . . . . . q. s.
Alcohol, *a sufficient quantity* . . . . . q. s.

Digest the Soap with Water, *sixteen parts* 16
until it is dissolved; dissolve the Camphor and Oil in
Alcohol, *seventy parts* 70
Mix the two solutions, filter through paper, and wash the filter, if necessary, with a mixture of *one part* of Water and *four parts* of Alcohol until the filtrate weighs *one hundred parts* 100

¶ The proportions of the old formula have been preserved as nearly as possible.

	Present formula.		Approximation.		Per Cent.	
Soap	4 ʒ	1,920 grs.	19	10	10.4	10
Camphor	2 ʒ	960 "	10	5	5.2	5
Oil Rosemary	½ fl. ʒ	207 "	2	1	1.	1
Water	6 fl. ʒ	2,734 "	27	15	15.6	16
Alcohol	32 fl. ʒ	12,176 "	122	65	67.8	70

The Comm. of the California Coll. of Pharm. recommends to reduce the percentage of alcohol. Others recommend to replace 5 or 10% of alcohol by so much water of ammonia.

Linimentum Terebinthinæ. *Liniment of Turpentine.*

Take of Resin Cerate, *two parts* 2
Oil of Turpentine, *one part* 1

Melt the Resin Cerate with a gentle heat, then gradually add the Oil, constantly stirring until they are thoroughly mixed.

¶ The proportions of the present U. S. Ph. are, by weight: Resin Cerate, 12; Oil of Turpentine, 6.531 parts.

***Linteum (?).—Linum.**

Liquor Ammonii Acetatis. *Solution of Acetate of Ammonium.*

Take of	Carbonate of Ammonium, *one part*	1
	Distilled Water, *a sufficient quantity*	q. s.
	Acetic Acid, *three parts*	3
	or *a sufficient quantity*	q. s.

Dissolve the Carbonate of Ammonium in Distilled Water *twenty parts* 20
filter the solution, and pass enough Distilled Water through the filter to make the whole filtrate weigh *twenty-one parts* 21
Add to this the Acetic Acid, or as much of it as may be necessary to completely saturate the Carbonate of Ammonium.

N. B.—The filtered solution of Carbonate of Ammonium, made of the strength above indicated, may be kept on hand, and when the Solution of Acetate of Ammonium is called for, it may be made by mixing

Solution of Carbonate of Ammonium, *twenty-one parts*	21
Acetic Acid, *three parts*	3

or, so much thereof as may be necessary to completely saturate the Carbonate of Ammonium.

¶ The present U. S. Ph. has two alternate processes: one directs to saturate Diluted Acetic Acid with Carb. Amm.; the other directs two solutions to be made, of Acetic Acid, and Carb. Amm., respectively, which are to be mixed in equal volumes. Further, the present U. S. Ph. directs, in the first formula, the solution to be filtered, *after* the acid is saturated by the carbonate. This is wrong, as it causes most of the dissolved carbonic acid gas to be lost. The above formula is proposed to be substituted for both of the present pharmacopœia. The strength is the same. In the present U. S. Ph. 1 pint of the finished solution corresponds to about 320 grs. of Carb. Amm.; we therefore have *about* the following proportion:

			Approximations.	
Carb. Ammon. . . .	320 grs.	320 grs.	320	1
Water	14 fl. ʒ	6,379 "	6,400	20
Acetic Acid	2 fl. ʒ	950 "	960	3

The first process of the present pharm., if rendered into parts by weight, would be as follows:

Take of	Diluted Acetic Acid, *one thousand parts*	1000
	Carbonate of Ammonium, *forty-three parts*	43
	or *a sufficient quantity*	q. s.

Reduce the Carbonate of Ammonium to powder, and gradually add it to the acid until the latter is neutralized.

This preparation, when dispensed, should be freshly made.

Liquor Arsenici Chloridi. *Solution of Chloride of Arsenic.*

Take of	Arsenious Acid, in small pieces, *one part*	1
	Hydrochloric Acid, *two parts*	2
	Distilled Water, *a sufficient quantity*	q. s.

Boil the Arsenious Acid with the Hydrochloric Acid and with Distilled Water, *twenty-five parts* 25
until the Arsenious Acid is entirely dissolved; filter, wash the filter with a little Distilled Water, and add enough Distilled Water to the filtrate to make it weigh *one hundred parts* 100

¶ The present strength is:

		Approximation.	
Arsenious Acid	64 grs.	64	1
Hydrochloric Acid	2 fl. ʒ	133	2
Final product	1 pint	7,400 about	115

This proportion has been raised to 1 of Arsenious Acid in 100, and the same proportion has been adopted in *all* liquid Arsenic preparations.

Liquor Arsenici et Hydrargyri Iodidi.

Solution of Iodide of Arsenic and Mercury. Donovan's Solution.

Take of	Iodide of Arsenic, *one part*	1
	Red Iodide of Mercury, *one part*	1
	Distilled Water, *a sufficient quantity*	q. s.

Rub the Iodides with Water, *ten parts* 10
and when they are dissolved, filter; wash the filter with a little Distilled Water, and add enough Distilled Water to the filtrate to make it weigh *one hundred parts* 100

¶ Present Formula:

		Approximation.	
Iod. Mercury	35 grs.	35	1
Iod. Arsenic	35 grs.	35	1
Final Product	8 fl. ʒ	3,645	105

This has been changed to 1 in 100. See the preceding.

Liquor Barii Chloridi. *Solution of Chloride of Barium.*

Take of	Chloride of Barium, *one part*	1
	Distilled Water, *a sufficient quantity*	q. s.

Dissolve the Chloride of Barium in Distilled Water, *three parts* . 3
filter through paper, and wash the filter, if necessary, with a little Distilled Water until the product weighs *three parts* 3

¶ The present strength (20 of $BaCl_2$ in 57 parts) is practically the same.

Liquor Calcii Chloridi. *Solution of Chloride of Calcium.*

Take of	Marble, in small pieces, *three parts*	3
	Hydrochloric Acid, *six parts*	6
	Distilled Water, *a sufficient quantity*	q. s.

Mix the Acid with Distilled Water, *four parts* 4 and gradually add the Marble. Towards the close of the effervescence apply a gentle heat, and when the action has ceased, pour off the clear liquid, and evaporate it at a temperature not exceeding 150° C. (=302° F.) to dryness. Dissolve the residue in *one and one-half times* its weight of Distilled Water and filter through paper.

Or: Take of

	Chloride of Calcium, fused, *three parts*	3
	Distilled Water, *a sufficient quantity*	q. s.

Dissolve the salt in Distilled Water, *seven parts* 7 filter through paper, and wash the filter with enough Distilled Water to make the filtrate weigh *ten parts* 10

¶ The second process is much more convenient than the first.

Liquor Calcis. *Solution of Lime. Lime Water.*

Take of	Lime, *one part*	1
	Water, *a sufficient quantity*	q. s.
	Distilled Water, *sixty parts*	60

Slake the Lime by the gradual addition of hot Water, *one part* 1 Then add to it cold Water, *thirty parts* 30 and stir occasionally during half an hour. Allow it to stand at rest for one hour, decant the liquid and throw it away. Now add to the residue the Distilled Water, stir well, wait a short time for the coarser particles to subside, and pour the liquid, holding the undissolved Lime in suspension, into a glass-stoppered bottle. Pour off the clear liquid when wanted for use.

Water, free from saline or other obvious impurity, though not distilled, may be employed in this process.

Char.—Solution of Lime becomes turbid when heated, and clear again on cooling. Its alkaline reaction disappears entirely when an excess of carbonic acid has been passed through it, and the excess has been expelled by boiling (absence of alkalies, and alkaline carbonates). The spec. gr. of the clear solution is about 1.010, and it contains in solution about 0.13% of lime.

¶ The process has been changed so as to previously deprive the lime of other soluble alkalies.

The *Germ. Pharm. Rep.* adds: Lime-water is tested by heating it to boiling in a small flask closed with a cork, through which a narrow, open glass-tube is passed. On boiling it must become cloudy. 1 part of lime-water and 2 parts of alcohol of 0.830 must also yield a cloudy mixture. The two tests make an alkalimetrical assay superfluous.

*** Liquor Chloroformi Compositus.** *Compound Solution of Chloroform.*

SYN. *Chlorodyne.*

Take of	Hydrochlorate of Morphia, *one part*	1
	Oil of Peppermint, *two parts*	2
	Stronger Ether, *forty parts*	40
	Alcohol ("Strong. Alc."), *forty-eight parts*	48
	Molasses, *eighty parts*	80
	Diluted Hydrocyanic Acid, *one hundred and fourteen parts*	114
	Fluid Extract of Liquorice, *one hundred and fifty parts*	150
	Purified Chloroform, *three hundred and thirty parts*	330
	Simple Syrup, *one thousand two hundred thirty-five parts*	1235

Dissolve the Morphia salt and the Oil of Peppermint in the Alcohol, and add the Ether and Chloroform. Mix the Fluid Extract of Liquorice with the Molasses and Simple Syrup. Then gradually mix the latter solution with the former, and add the Diluted Hydrocyanic Acid.

¶ Whatever may be said about the apparently unscientific character of the above or similar formulæ, there appears to be a necessity of adopting a standard formula, as the preparation is much used, even in regular practice, and the various published formulæ differ much in the proportions of the powerful ingredients. The above is constructed after that of Squire, with substitution of the Fluid Extract of Liquorice for the powdered Extract. The formula might be much simplified. In its present shape it does not seem to deserve recognition.

Squire's Formula.			Approximations.	
Chloroform	4 fl. ʒ	2,698 grs.	337	330
Ether	1 fl. ʒ	332 "	41	40
Alcohol	1 fl. ʒ	372 "	47	48
Molasses	1 fl. ʒ	638 "	79	80
Powd. Ext. Liq.	2½ ʒ	1,200 "	150	150
Morphia Mur.	8 gr.	8 "	1	1
Oil Peppermint	16 ♏.	16 "	2	2
Dil. Hydrocy. Ac.	2 fl. ʒ	912 "	114	114
Syrup	17½ fl. ʒ	10,500 "	1,312	1,235
		16,676 grs.	2,083	2,000

*** Liquor Ferri Acetatis.** *Solution of Acetate of Iron.*

¶ This is recommended by some to be introduced into the U. S. Ph., chiefly for preparing the *Tinctura Ferri Acetatis Ætherea.* The process of the Germ. Pharm. may be adopted without alteration.

Liquor Ferri Chloridi (*a*). *Solution of Chloride of Iron.*

Take of	Iron, in the form of fine wire, and cut into small pieces, *fifteen parts*	15
	Hydrochloric Acid, *eighty-six parts*	86
	Nitric Acid, *a sufficient quantity*	q. s.
	Distilled Water, *a sufficient quantity*	q. s.

Put the Iron into a flask capable of holding double the volume of the intended product, pour upon it Hydrochloric Acid, *fifty-four parts* . 54

and let the mixture stand until effervescence ceases; then heat it to the boiling point, filter through paper, and having rinsed the flask and Iron wire with a little boiling Distilled Water, pass the washings through the filter. Add to the filtered liquid

Hydrochloric Acid, *thirty-two parts* 32

and pour the mixture, slowly and gradually, in a fine stream, into

Nitric Acid, *eight parts* 8

contained in a capacious porcelain vessel. After effervescence ceases, apply heat, by means of a sand-bath, until the liquid is free from nitrous odor, and ceases to yield a blue precipitate or color with ferricyanide of potassium. Should this reagent produce a blue color, a little more Nitric Acid must be added, and the excess evaporated off. Then allow the liquid to cool, and add enough Distilled Water to make the whole weigh

one hundred parts 100

Char.—A reddish-brown liquid, having an acid and strongly styptic taste, and the specific gravity. . . . When diluted with *five parts* of Water, it forms no precipitate or cloudiness, within ten minutes, with (a 10%) solution of chloride of barium (absence of sulphuric acid), and no blue precipitate or color with solution of ferricyanide of potassium (absence of ferrous salt). On adding a crystal of sulphate of iron to a sample of the solution, and afterwards a small quantity of strong *pure* sulphuric acid, no black color should develop near the crystal (absence of nitric acid).

One hundred parts of the solution, diluted with water, and treated with ammonia in excess, yield a precipitate of ferric oxide, which, when washed, dried, and ignited, weighs . . . grains.

¶ The proportions of the present U. S. Ph., calculated into parts by weight, are:

			Approximations.	
Iron Wire . . .	3 ʒ	1,440 gr.	14.4	15
Hydrochlor. Acid I. .	11 ʒ	5,280 "	52.8	54
" II. .	6½ ʒ	3,120 "	31.2	32
Nitric Acid . .	1½ ʒ	720 "	7.2	8
Water				
Final Product . .	16 fl. ʒ	9,879 "	98.79	100

By closely following the new formula proposed above, the product, if wanted identical in spec. grav. with the preparation of the present U. S. Ph., would have to weigh 102.9 parts. Instead of this figure, 100 parts were substituted; hence the spec. grav. will vary a little, but not materially, from the present one. Mr. Shuttleworth's improvement, of pouring the iron solution into the nitric acid, has been incorporated.

The following formula is furnished by Mr. B. F. McIntyre of New York:

Liquor Ferri Chloridi (*b*). *Solution of Chloride of Iron.*

Take of Iron, in the form of fine wire and cut into small pieces, *thirty-six parts* 36

Hydrochloric Acid, *two hundred and ten parts* . . . 210

Nitric Acid, *a sufficient quantity* . . . . . q. s.

Distilled Water, *a sufficient quantity* . . . . . q. s.

Introduce the Iron into a flask capable of holding 364 parts, pour upon it Hydrochloric Acid, *one hundred and thirty-two parts* . . . 132

and let the mixture stand until effervescence ceases. Then heat it to the boiling point, strain it through coarse muslin, and having rinsed the flask with boiling Distilled Water, pour the washings upon the strainer. Pour the strained liquid into a porcelain capsule capable of holding about 728 parts, add to it the remainder of the
Hydrochloric Acid, namely, *seventy-eight parts* 78
and, having heated the mixture to 88° C. (= 190° F.), add
Nitric Acid, *eighteen parts* 18
in small portions, pouring it down the inside surface of the capsule. Upon the cessation of effervescence, drop in
Nitric Acid, *a sufficient quantity* . . . . . q. s.
in very small portions at a time, until it no longer occasions effervescence, and until a small sample of the liquid diluted with Distilled Water ceases to produce a blue precipitate or color with ferricyanide of potassium. Then allow the liquid to become cold, filter it through fine muslin, previously wetted with Distilled Water, and add enough Distilled Water to make the whole product weigh *two hundred and forty-seven parts* . 247

Liquor Ferri Citratis. *Solution of Citrate of Iron.*

Take of Citric Acid, in coarse powder, *thirty parts* 30
Solution of Tersulphate of Iron, *one hundred and five parts* 105
Water of Ammonia, *eighty-four parts* 84
Water, *a sufficient quantity* . . . . . q. s.

To the Water of Ammonia, previously diluted with
cold Water, *two hundred parts* 200
add, with constant stirring, the Solution of Tersulphate of Iron, previously diluted with cold Water, *one thousand parts* 1000
Pour the whole on a wet muslin strainer, allow the precipitate to drain, then return it to the vessel, and mix it intimately with
cold Water, *twelve hundred parts* 1200
Again drain it on the strainer, and repeat the operation once more. Then allow the excess of water to run off. Transfer *one-half* of the moist precipitate to a porcelain capsule, heat it on a water-bath to 60° C. (=140° F.), add the Citric Acid, and stir the mixture until the precipitate is dissolved, or nearly so. Then add as much of the reserved precipitate as may be necessary to fully saturate the acid, while continuing the digestion for several hours. Lastly, filter the liquid, and evaporate it, at a temperature not exceeding 60° C. (=140° F.), until it weighs *one hundred parts* . 100

¶ This formula is based on the following re-calculation of the present formula:

			Approximations.	
Citric Acid . .	5 ℥, 360 grs.	2,760 grs.	33	30
Sol. Tersulph. Iron . .	16 fl. ℥	9,624 "	114	105
Wat. Ammon. . .	20 fl. ℥	8,750 "	105†	84
Water	q. s.	q. s.	q. s.	
Final Product . .	16 fl. ℥	9,041 "	108	100

† This amount of Water of Ammonia is excessive.

*** Liquor Ferri Dialysati.** *(Solution of) Dialyzed Iron.*

¶ The *Germ. Pharm. Rep.* adds: A clear, dark red-brown, odorless liquid of a faintly astringent taste, and a spec. gr. of 1.046. It does not redden blue litmus paper. Diluted with water until it is transparent, the solution must not be clouded in less than 2 minutes by nitrate of silver. Evaporated to dryness, it should leave 5% of residue.

Liquor Ferri Nitratis. *Solution of Nitrate of Iron.*

Take of Iron, in the form of fine wire, and cut into small pieces, *five parts* 5
Nitric Acid, *ten parts* 10
Distilled Water, *a sufficient quantity* . . . . . q. s.

Mix the Iron wire with Distilled Water, *twenty-four parts* . . 24
in a wide-mouthed bottle, and add to the mixture, in small portions at a time, with frequent agitation, Nitric Acid, *six parts* 6
previously mixed with Distilled Water, *ten parts* 10
moderating the reaction, by setting the vessel in cold water, in order to prevent the occurrence of red fumes. When the effervescence has nearly ceased, agitate the solution with the undissolved Iron, until a portion of the liquid, on being filtered, exhibits a pale-green color. Then filter the liquid, and, having poured it into a capacious porcelain capsule, heat it to the temperature of 54° C. (=129° F.), and add the remainder of the
Nitric Acid, namely, *four parts* 4
When the effervescence has ceased, continue the heat until no more gas escapes, and then add enough Distilled Water to make the product weigh *seventy-two parts* 72

Char.—A transparent liquid, of a pale amber color, having a spec. grav. between 1.060 and 1.070. It does not afford a blue precipitate or color with ferricyanide of potassium (absence of ferrous salt). One hundred parts of it, on the addition of ammonia in excess, yield a reddish-brown precipitate which, when washed, dried, and ignited, weighs between 1.7 and 2 parts.

¶ The formula of the present U. S. Ph. directs:

			Approximations.			
Iron wire	2½ ʒ	1,200 grs.	1	2	5	5
Nitric Acid	5 ʒ	2,400 "	2	4	10	10
Dist. Water	18 fl. ʒ	8,200 "	7	14	34	34
Final Product	36 fl. ʒ	17,471 "	14.5	29	72.5	72

Liquor Ferri Subsulphatis. *Solution of Subsulphate of Iron.*

SYN. *Monsel's Solution.*

Take of Sulphate of Iron, in coarse powder, *eighty parts* . . 80
Sulphuric Acid, *seven parts* 7
Nitric Acid, *eleven parts* 11
Distilled Water, *a sufficient quantity* . . . . . q. s.

Mix the Acids with Distilled Water, *fifty parts* 50

in a capacious porcelain capsule, and having heated the mixture to the boiling point, add the Sulphate of Iron, one-fourth (*twenty parts*) at a time, stirring after each addition until effervescence ceases. Then keep the solution in brisk ebullition until nitrous vapors are no longer perceptible, and the liquid assumes a deep ruby-red tint. Lastly, add enough Distilled Water to make the whole weigh *one hundred and eighteen parts* 118

Char.—An inodorous, ruby-red, syrupy liquid, of an extremely astringent taste, without causticity. Its specific gravity is 1.554. It mixes with water and alcohol in all proportions without decomposition, and yields with ammonia a bulky, reddish-brown precipitate. A few drops added to solution of ferricyanide of potassium impart to the latter a pure greenish-brown color, without a trace of blue (absence of ferrous sulphate).

By evaporating a portion of the solution on a glass surface, with moderate heat, the salt may be obtained in transparent scales, which are deliquescent and readily soluble in water.

¶ The proportions were calculated by Mr. L. Dohme as follows:

Present Formula.			Approximation.
Sulph. Iron	12 ℥	5,760 grs.	80
Sulph. Acid	1 ℥, 30 grs.	510 "	7
Nitric Acid	1 ℥, 300 grs.	780 "	11 (instead of 10.75)
Water	8 fl. ℥	3,646 "	50
Final product	12 fl. ℥	8,487 "	118

The spec. grav. of the preparation of the present U. S. Ph. is 1.552.

Liquor Ferri Tersulphatis. *Solution of Tersulphate of Iron.*

Take of Sulphate of Iron, in coarse powder, *eighty parts* . . . 80
Sulphuric Acid, *fourteen parts* 14
Nitric Acid, *eleven parts* 11
Distilled Water, *a sufficient quantity* . . . . . q. s.

Mix the Acids with Distilled Water, *fifty parts* 50
in a capacious porcelain capsule, and having heated the mixture to the boiling point, add the Sulphate of Iron, one-fourth (*twenty parts*) at a time, stirring after each addition until effervescence ceases. Then continue the heat until the solution acquires a reddish-brown color, and is free from nitrous odor. Lastly, add enough Distilled Water to make the whole weigh *two hundred parts* 200

Char.—A dark reddish-brown liquid, nearly devoid of odor, and of an acid and extremely styptic taste. Its specific gravity is 1.317. It mixes with water and alcohol in all proportions without decomposition. It does not afford a blue precipitate or color with ferricyanide of potassium (absence of ferrous salt). One hundred parts of it yield, on the addition of ammonia in excess, a bulky reddish-brown precipitate, which is free from black discoloration, and which, after washing, drying, and igniting, weighs . . . parts.

¶ The calculation below given was furnished by Mr. L. Dohme. No time was available to determine the actual weight of ferric oxide. The spec. gr. of the proposed solution is 1.317, while that of the present pharm. is 1.320. In view of the simple figures above given this difference is immaterial.

Present Formula.			Approximations.		
Sulph. Iron	12 ℥	5,760 grs.	56.5	113	80
Sulph. Acid	2 ℥, 60 grs.	1,020 "	10.	20	14
Nitr. Acid	1 ℥, 360 "	840 "	8.3	17	11
Water	8 fl. ℥	3,646 "	36.	72	50
Final product	24 fl. ℥	14,436 "	141.5	283	200

Liquor Guttaperchæ. *Solution of Guttapercha.*

Take of	Guttapercha, in thin slices, *eight parts*	8
	Chloroform, *eighty-two parts*	82
	Carbonate of Lead, in fine powder, *ten parts*	10

Add the Guttapercha to Chloroform, *sixty parts* 60 contained in a bottle, and shake occasionally until it is dissolved. Then add the Carbonate of Lead, previously mixed with the remainder of the Chloroform, and having several times shaken the whole together, at intervals of half an hour, set the mixture aside and let it stand for ten days, or until the insoluble matter has subsided and the solution become limpid, and is either colorless or of a pale straw-color. Lastly, decant the liquid and preserve it in small cork-stoppered vials.

¶ The present U. S. Ph. directs *purified* chloroform, which is unnecessary.

Liquor Hydrargyri Nitratis. *Solution of Nitrate of Mercury.*

Take of	Mercury, *forty parts*	40
	Nitric Acid, *ninety-one parts*	91
	Distilled Water, *eleven parts*	11

Dissolve the Mercury, with the aid of a gentle heat, in the Acid previously mixed with the Distilled Water. When reddish vapors cease to rise evaporate the liquid until it weighs *one hundred parts* 100

Keep it in a glass-stoppered bottle.

Or: Take of

	Red Oxide of Mercury, *forty-four parts*	44
	Nitric Acid, *forty-nine parts*	49
	Distilled Water, *ten parts*	10

Mix the Acid with the Water, dissolve the Oxide of Mercury in the mixture, and evaporate until the liquid weighs *one hundred parts* 100

¶ The proportions are the same as at present.

Liquor Iodinii Compositus. *Compound Solution of Iodine.*

SYN. *Lugol's Solution.*

Take of	Iodine, *two parts*	2
	Iodide of Potassium, *four parts*	4
	Distilled Water, *forty parts*	40

Dissolve the Iodine and Iodide of Potassium in the Distilled Water.

¶ The proportions are almost the same as at present. The exact amount of water would be 40.5 parts, which was changed to 40. See also *Tinct. Iodinii Co.*

Liquor Magnesii Citratis. *Solution of Citrate of Magnesium.*

Take of	Carbonate of Magnesium, *five parts*	5
	Citric Acid, *ten parts*	10
	Syrup of Citric Acid, *thirty parts*	30
	Bicarbonate of Potassium, *one part*	1
	Water, *a sufficient quantity*	q. s.

Dissolve the Citric Acid in Water, *forty-five parts* 45
and having added the Carbonate of Magnesium, stir until it is dissolved. Filter the solution into a bottle containing the Syrup of Citric Acid. Then add the Bicarbonate of Potassium and enough Water to make the whole weigh *one hundred and twelve parts* 112
Immediately close the bottle with a cork, and secure with twine. Lastly, shake the mixture occasionally until the Bibarbonate is dissolved.

The quantity to be dispensed at one time is such that it will fill a bottle of the capacity of *three hundred and sixty* cubic centimetres, or *twelve* fluid ounces, for which purpose the parts by weight of the formula are to be taken as follows:

Carbonate of Magnesium	13 grammes	or	200 grains.
Citric Acid	26 "		400 "
Syrup of Citric Acid	80 "		1200 "
Bicarbonate of Potassium	2.6 "		40 "

Water sufficient to dissolve the Citric Acid and to fill the bottle.

¶ In order to afford a practical formula, the *parts* should be so interpreted as to furnish the usual quantity of the mixture dispensed at one time. For this reason, actual working quantities are added. Some pharmacists advocate the addition of about 2% of alcohol, to make the solution more stable.

Liquor Morphiæ Sulphatis. *Solution of Sulphate of Morphia.*

Take of	Sulphate of Morphia, *one part*	1
	Distilled Water, *five hundred parts*	500

Dissolve.

¶ The present formula directs 1 grain of Sulph. of Morphia in 1 fl. ʒ of water, that is, 1 part of Sulph. of Morphia in 455.7 parts of Water.

This proportion may either be made into 1 part of Sulphate of Morphia and 450 parts of Water; or it may be made more simple, without doing great violence to its strength, by making it as above: 1 part of Sulphate of Morphia and 500 parts of Water.

The stronger solution of Sulph. of Morphia (*Magendie's*) should *not* be made officinal, since the above is known universally as "U. S. Solution of Morphia," and there would be danger of confusion.

***Liquor Pepsini.** *Solution of Pepsin. Liquid Pepsin.*

Take of	Saccharated Pepsin, *six parts*	6
	Hydrochloric Acid, *two parts*	2
	Glycerin, *forty parts*	40
	Water, *a sufficient quantity*	q. s.

Dissolve the Saccharated Pepsin in Water, *fifty parts* 50 previously mixed with the Hydrochloric Acid. Filter the solution into a tared bottle containing the Glycerin, and wash the filter with sufficient Water to make the whole product weigh *one hundred parts* 100

¶ This is about the strength of the solution as commonly used:

			Approximations.		
Saccbar. Pepsin	128 gr.†	128 gr.	4	8	6
Hydrochlor. Acid	½ fl. ʒ	32 "	1	2	2
Glycerin	1⅞ fl. ʒ	855 "	27	41	40
Water	2½ fl. ʒ	1,140 "	35	54	q. s. to 100

† Some use only one-half of this quantity.

Liquor Plumbi Subacetatis. *Solution of Subacetate of Lead.*

Take of	Acetate of Lead, *ten parts*	10
	Oxide of Lead, in fine powder, *seven parts*	7
	Boiling Distilled Water, *a sufficient quantity*	q. s.

Put the Acetate and Oxide of Lead into Boiling Water, *forty parts* 40 contained in a glass or porcelain vessel, and boil for half an hour, occasionally adding Boiling Water to preserve the measure; then filter through paper, preventing as much as possible the access of air. Wash the filter with enough Distilled Water, recently boiled and partly cooled, to make the product weigh *forty parts* 40

¶ The present U. S. Ph. failed to direct what the bulk of the product should be. Although it gave the spec. grav. of the product, which really amounts to the same thing, it would have been better to state the bulk. The above formula has been amended in this respect.

The amount of Oxide of Lead has been a trifle increased to counterbalance any impurities which may be present.

Present Formula.		Weight. Doubled.	Approximation.		
Acetate Lead	16 ʒ	32 ʒ	10	10	
Oxide Lead	9½ ʒ	19 ʒ	6	7	(increased on purpose.)
Boil. Water	64 fl. ʒ				
End Product (spec. gr. 1.267)		128 ʒ	40	40	

Liquor Plumbi Subacetatis Dilutus.
Diluted Solution of Subacetate of Lead.

Take of	Solution of Subacetate of Lead, *one part*	1
	Distilled Water, *forty parts*	40

Mix them.

¶ Same strength as at present.

Liquor Potassæ. *Solution of Potassa.*

Take of Bicarbonate of Potassium, *fourteen parts* 14
Lime, *eight parts* 8
Distilled Water, *a sufficient quantity* . . . . . q. s.

Dissolve the Bicarbonate of Potassium in Distilled Water, *fifty-four parts* . . . . . 54 and heat the solution until effervescence ceases. Then add Distilled Water to make up the loss by evaporation, and heat the solution to the boiling point.

Mix the Lime with Distilled Water, *fifty-four parts* . . . . . 54 to a smooth milk, and add it gradually, and in small portions at a time, to the boiling solution of the carbonate, and, when all is added, continue the boiling for ten minutes. Then remove the heat, cover the vessel tightly, and let it stand, so that the insoluble matter may subside. Remove the supernatant clear liquid by means of a siphon, and set it aside in a tightly-stoppered bottle; transfer the remainder to a muslin strainer, and when the liquid portion has passed, add *enough* Distilled Water, through the strainer, so that, when the strained liquid is added to the reserved portion, the whole product may weigh *one hundred parts* 100

Solution of Potassa may also be prepared in the following manner:

Take of Potassa, *sixty-six parts* 66
Distilled Water, *one thousand parts* 1000

Dissolve the Potassa in the Distilled Water, and allow the solution to stand until the sediment subsides. Then pour off the clear liquid, and keep it in a well-stopped bottle of green glass.

Liquor Potassii Arsenitis.

Solution of Arsenite of Potassium. Fowler's Solution.

Take of Arsenious Acid, in small pieces, *one part* 1
Bicarbonate of Potassium, *one part* 1
Compound Spirit of Lavender, *three parts* 3
Distilled Water, *a sufficient quantity* . . . . . q. s.

Boil the Arsenious Acid and Bicarbonate of Potassium, in a glass-vessel, with Distilled Water, *five parts* . . . . . 5 until the Acid is entirely dissolved; and add Distilled Water, about *eighty parts* . . . . . 80 Then add the Compound Spirit of Lavender, and afterwards enough Distilled Water to make the whole product weigh *one hundred parts* . . 100

Present Formula.		Approximation.	
Arsenious Acid . .	64 grs.	64 grs.	1
Bicarb. Potass. . . .	64 "	64 "	1
Comp. Spir. Lav. . .	½ fl. ʒ	200 "	3
Total Product	16 fl. ʒ	ab. 7,400 "	115

This was made 1 in 100, so as to correspond with *all* the other liquid arsenic preparations, which are all made of the strength of 1 per cent.

Liquor Potassii Citratis. *Solution of Citrate of Potassium.*

Take of Citric Acid, *two parts* 2
Bicarbonate of Potassium, *three parts* 3
Water, *thirty parts* 30

Dissolve the Citric Acid and the Bicarbonate of Potassium, each, in Water, *fifteen parts* . . . . . 15 and strain each solution separately through muslin. Then mix them, and, when effervescence has ceased, transfer the liquid to a bottle.

¶ Strength same as at present. Formula is slightly improved (see *Nat. Disp.*, p. 849).

Liquor Potassii Permanganatis. *Solution of Permanganate of Potassium.*

Take of Permanganate of Potassium, *one part* 1
Distilled Water, *ninety-nine parts* 99

Dissolve the Permanganate of Potassium in the Distilled Water.

¶ The present formula directs, expressed in weight, Permang. of Pot., 1 part; Dist. Water, 114 parts. The solution was altered to 1%.

***Liquor Potassii Silicatis** (?).

Liquor Sodæ. *Solution of Soda.*

Take of Carbonate of Sodium, in crystals, *twenty-seven parts* . 27
Lime, *eight parts* 8
Distilled Water, *a sufficient quantity* . . . . . q. s.

Dissolve the Carbonate of Sodium in Distilled Water, *fifty-three parts* 53 and heat the solution to the boiling point. Mix the Lime with Distilled Water, *forty-seven parts* . . . . . 47 to a smooth milk, and add it gradually, and in small portions at a time, to the boiling solution of the carbonate, and, when all is added, continue the boiling for ten minutes. Then remove the heat, cover the vessel tightly, and let it stand, so that the insoluble matter may subside. Remove the supernatant, clear liquid, by means of a siphon, and set it aside in a tightly-stopped bottle. Transfer the remainder to a muslin strainer, and when the liquid portion has passed, add *enough* Distilled Water, through the strainer, so that, when the strained liquid is added to the reserved portion, the whole product may weigh *one hundred parts* . 100

Present Formula.			Approx.	Per Cent.	
Carbon. Sodium .	26	℥ 12,480 grs.	125	26.7	27
Lime . . .	8	℥ 3,840 "	38	8.1	8
Water . . .	6⅓	*O* 47,391 "	470	100.4	100
Final Product (sp. gr. 1.071)	6	*O* 46,854 "	468	100	100

The product by the new formula contains 5.76% of hydrate of sodium, instead of 5.7% as now, and is, therefore, only a trifle stronger.

Liquor Sodæ Chlorinatæ. *Solution of Chlorinated Soda.*

Take of	Chlorinated Lime, *one part*	1
	Carbonate of Sodium, *two parts*	2
	Water, *a sufficient quantity*	q. s.

Dissolve the Carbonate of Sodium in Water, *four parts* 4
with the aid of heat. Triturate the Chlorinated Lime, a little at a time, with small quantities of Water gradually added, sufficient to produce a smooth, uniform mixture. Add to this enough Water to make the whole weigh *twelve parts* 12
and set it aside for 24 hours. Then decant the clear liquid, and having transferred the residue to a muslin strainer, allow it to drain until enough liquid has passed to make, with the decanted liquid, *ten parts* 10
Mix this thoroughly with the solution of Carbonate of Sodium, transfer the mixture to a muslin stainer and allow it to drain; then pass enough Water through the strainer, if necessary, to make the whole product weigh *fifteen parts* 15
Lastly, keep the liquid in glass-stoppered bottles protected from the light.

Char.—A transparent colorless liquid, having a slight odor of chlorine, and a sharp saline taste. Its spec. grav. is 1.045 [? see below]. It rapidly decolorizes solution of indigo, and produces a copious, light-brown precipitate with solution of sulphate of iron.

Present Proportions.			Approximations.	
Chlorinated Lime	12 ʒ	12 ʒ	12	1
Carb. Sodium	24 ʒ	24 ʒ	24	2
Water	12 pints	180 ʒ	180	15
Final Product	11½ pints	182.6 ʒ	180	15

The slight change in proportions will cause a trifling variation in the spec. grav.

Liquor Sodii Arseniatis. *Solution of Arseniate of Sodium.*

Take of	Arseniate of Sodium, rendered anhydrous by a heat not exceeding 149° C. (=300° F.), *one part*	1
	Distilled Water, *ninety-nine parts*	99

Dissolve the Arseniate of Sodium in the Distilled Water.

¶ The present strength of the solution is 1 in 114 by weight. That of the British is 1 in 110. The above strength, namely 1%, has been adopted for *all* the liquid arsenic preparations.

*** Liquor Sodii Silicatis.**

Liquor Zinci Chloridi. *Solution of Chloride of Zinc.*

Take of	Zinc, granulated, *eighteen parts*	18
	Nitric Acid, *one part*	1
	Precipitated Carbonate of Zinc, *one part*	1
	Hydrochloric Acid, *a sufficient quantity*	q. s.
	Distilled Water, *a sufficient quantity*	q. s.

To the Zinc, contained in a glass or porcelain vessel, add gradually *enough* Hydrochloric Acid to dissolve it, then strain the solution, add the Nitric Acid, and evaporate to dryness. Dissolve the dry mass in Water, *fifteen parts*. 15
add the Precipitated Carbonate of Zinc, and agitate the mixture occasionally during 24 hours, then filter through paper, adding enough Distilled Water through the filter to make the product weigh *seventy five parts* . 75

Present Formula.			Approximations.	
Zinc	6 ʒ	2,880	19	18
Nitr. Acid	150 gr.	150	1	1
Prec. Carb. Z.	150 gr.	150	1	1
Final Product (spec. gr. 1.598)	16 fl. ʒ	11,614	77	75

Liriodendron (*d*).—* **Lithii Benzoas** (?).—* **Lithii Bromidum.**—**Lithii Carbonas.**—**Lithii Citras.**—* **Lithii Salicylas.**—**Lobelia.**—**Lupulina.**—**Lycopodium.**—**Lycopus.**—**Macis** (*d*).

Magnesia. *Magnesia.*

¶ It is proposed to make the *heavy* variety officinal instead of the light, because it is equally suitable for all purposes for which the latter is used, and because it takes up so much less room.

Magnesii Carbonas. *Carbonate of Magnesium.*

¶ The remarks made to the preceding apply also here.

* **Magnesii Hypophosphis.**—* **Magnesii Sulphis** (?).—**Magnesii Sulphas.**—**Magnolia** (*d*).—* **Maltum** (Maltum Hordei, Barley Malt).—**Manganesii Oxidum Nigrum.**—**Manganesii Sulphas.**—**Manna.**—**Maranta** (*d*; *see* under *Avenæ Farina*).—**Marmor.**—**Marrubium.**—**Mastiche.**—**Matico.**—**Matricaria** (*d*).—**Mel.**

Mel Despumatum. *Clarified Honey.*

Take of Honey, *any convenient quantity* . . . . . q. s.

Melt it by means of a water-bath, and remove the scum. Then strain the Honey through flannel, previously moistened with water.

¶ The removal of the scum is best effected by the manipulation proposed by Mr. G. C. Close, of Brooklyn, namely, to pour carefully a shallow layer of cold water on top of the melted honey, which will cause all the scum to ascend to the surface of the water, and there form a tough skin which may be readily removed. The water can easily be poured off again. The operation is facilitated by melting the honey in a deep narrow vessel of such a capacity that the honey, when melted, will nearly fill it. Straining through flannel is advisable to remove foreign matters which have not risen to the top.

Mel Rosæ. *Honey of Rose.*

Take of Red Rose, in moderately fine powder, *eight parts* . . 8
Clarified Honey, *ninety-two parts* 92
Diluted Alcohol, *a sufficient quantity* . . . . . q. s.

Moisten the powder with Diluted Alcohol, *two parts* . . . 2
pack it firmly in a conical glass percolator, and gradually pour Diluted Alcohol upon it, until the percolate weighs *three parts* 3
Set this aside, and continue the percolation until an additional *thirty-two parts* 32
are obtained. Evaporate this, by means of a water-bath, to *five parts* 5
add the reserved liquid, and mix the whole with the Clarified Honey.
The product should weigh *one hundred parts* 100

¶ Nearly of the same strength as at present.

Mel Sodii Boratis. *Honey of Borate of Sodium.*

Take of Borate of Sodium, in fine powder, *one part* 1
Clarified Honey, *eight parts* 8

Mix them.

¶ Same strength as at present.

Melissa.—* Menispermum (?).—* Mentha Crispa.—Mentha Piperita.—Mentha Viridis.—Mezereum.

Misturæ. *Mixtures.*

¶ Some recommend to adopt the form *Mixtura*, instead of *Mistura*. While it must be acknowledged that the former is etymologically the correcter spelling, yet the usage and the tradition of the best manuscripts of classical authors preponderate in favor of *Mistura*.

Mistura Ammoniaci. *Ammoniac Mixture.*

Take of Ammoniac, in tears, *one part* 1
Water, *thirty parts* 30

Add the Water very gradually to the Ammoniac in a mortar, rubbing them together until they are thoroughly mixed, and strain.

¶ Same strength as at present.

Mistura Amygdalæ. *Almond Mixture.*

Take of Sweet Almond, *eight parts* 8
Gum Arabic, in fine powder, *one part* 1
Sugar, in fine powder, *four parts* 4
Distilled Water, *one hundred and twenty parts* . . 120

Having blanched the Almonds, add the Gum Arabic and Sugar, and beat them in a mortar until they are thoroughly mixed; then rub the mixture with the Distilled Water, gradually added, and strain.

¶ Proportions the same as at present, except the water, which, according to the present formula, would amount to 122 parts.

Mistura Asafœtidæ. *Asafœtida Mixture.*

Take of	Asafœtida, *one part*	1
	Water, *thirty parts*	30

Add the Water gradually to the Asafœtida, triturating constantly until they are thoroughly mixed.

¶ Same strength as at present.

Mistura Chloroformi. *Chloroform Mixture.*

Take of	Purified Chloroform, *sixteen parts*	16
	Camphor, *four parts*	4
	Yolk of Egg, *twenty parts*	20
	Water, *one hundred and eighty parts*	180

Rub the Yolk of Egg in a mortar, first by itself, then with the Camphor previously dissolved in the Chloroform, and lastly with the Water, gradually added, so as to make a uniform mixture.

Substituting *gramme* for *part*, the yolk of *one* good-sized egg will represent 20 parts or grammes.

Substituting *drachm* for *part*, the yolks of *four* good-sized eggs will represent 20 parts or drachms.

¶ Proportions are about the same as at present.

	Present Formula.			
Chloroform	½ ʒ	240 grs.	240	16
Camphor	1 ʒ	60 "	60	4
Yolk of 1 Egg	293 grs.†	293 "	300	20
Water	6 fl. ʒ	2,734 "	2,800	180

†The weight of the yolk of one middling-sized egg was determined by experiment. The proportions were *not* reduced to simpler figures, because the 20 parts of yolk, if taken in grammes, will just about represent the yolk of *one* good-sized egg.

***Mistura Copaibæ.** *Mixture of Copaiva.*

Take of	Copaiva, *ten parts*	10
	Spirit of Nitrous Ether, *six parts*	6
	Compound Spirit of Lavender, *six parts*	6
	Solution of Potassa, *eight parts*	8
	Syrup of Lemon, *seventy parts*	70

Mix the Copaiva with the Solution of Potassa and the Spirits. Then add the Syrup of Lemons.

¶ A mixture of Copaiva should be made officinal. The above is an approach to the ordinary formulæ in use and its strength is easily remembered; it is, however, capable of improvement.

Mistura Cretæ. *Chalk Mixture.*

Take of	Prepared Chalk, *four parts*	4
	Glycerin, *five parts*	5
	Gum Arabic, in fine powder, *two parts*	2
	Cinnamon Water, *three hundred parts*	300
	Water, *three hundred parts*	300

Rub the Chalk and Gum Arabic with the Water gradually added; then add the other ingredients, and mix the whole together.

¶ Proportions are almost identical with those of the present U. S. Ph.

Mistura Ferri Composita. *Compound Mixture of Iron.*

Take of	Myrrh, in tears, *six parts*	6
	Sugar, in coarse powder, *six parts*	6
	Carbonate of Potassium, *three parts*	3
	Sulphate of Iron, in coarse powder, *two parts*	2
	Spirit of Lavender, *eighteen parts*	18
	Rose Water, *three hundred and fifteen parts*	315

Rub the Myrrh, Sugar, and Carbonate of Potassium with the Rose Water gradually added; then with the Spirit of Lavender, and lastly with the Sulphate of Iron. Pour the mixture immediately into a bottle, which must be well stopped.

The finished product should weigh *three hundred and fifty parts* . 350

¶ The proportions of this formula differ but slightly from those of the present U. S. Ph.

Present Formula.				Approximations.		
Myrrh	60 grs.	60 grs.	12	12	12	6
Sugar	60 "	60 "	12	12	12	6
Carb. Pot.	25 "	25 "	5	5	6	3
Sulph. Iron	20 "	20 "	4	4	4	2
Spirit Lavend.	½ fl. ʒ	186 "	37	37	36	18
Rose Water	7⅛ fl. ʒ	3,418 "	687	688	q. s. ad	q. s. ad
Total Product				758 parts.	700 parts.	350

Mistura Glycyrrhizæ Composita. *Compound Mixture of Liquorice.*

SYN. *Brown Mixture.*

Take of	Purified Extract of Liquorice, in fine powder, *three parts*	3
	Sugar, in coarse powder, *three parts*	3
	Gum Arabic, in fine powder, *three parts*	3
	Camphorated Tincture of Opium, *twelve parts*	12
	Wine of Antimony, *six parts*	6
	Spirit of Nitrous Ether, *two parts*	2
	Water, *seventy-one parts*	71

Rub the Extract of Liquorice, Sugar, and Gum Arabic with the Water,

gradually added; then add the other ingredients, and mix the whole thoroughly together.

¶ The present formula, calculated in parts by weight, contains the above ingredients in the following proportions: 8, 8, 8, 30, 15, 6, 185; total 260. These have been converted into the nearest percentages. Purified Ext. of Liquorice should be substituted for the common extract.

Mistura Potassii Citratis. *Mixture of Citrate of Potassium.*

SYN. *Neutral Mixture.*

Take of	Lemon Juice, fresh, and strained, *a convenient quantity*	q. s.
	Bicarbonate of Potassium, *a sufficient quantity* . .	q. s.

Add the Bicarbonate gradually to the Lemon Juice, until the acid is neutralized.

¶ The lemon juice should be strained, and not the finished mixture (*Maisch*).

*** Mistura Rhei Composita.** *Compound Rhubarb Mixture.*

Take of	Fluid Extract of Ipecac, *one part*	1
	Fluid Extract of Rhubarb, *five parts*	5
	Bicarbonate of Sodium, *ten parts*	10
	Glycerin, *one hundred and thirty-four parts* . . .	134
	Peppermint Water, *two hundred and eighty-six parts* .	286

Dissolve the Bicarbonate of Sodium in the Peppermint Water; then add the Glycerin and Fluid Extracts, and mix the whole together.

¶ This is a formula, published by Dr. E. R. Squibb, as being largely used in Brooklyn, New York, and also elsewhere, as a carminative and stomachic for children, in doses of ½ to 1 teaspoonful, 2–3 times a day. The original formula is:

		Approximation.	
Fl. Ext. Ipecac . .	51 ♏	50 grs.	1
" " Rhubarb . .	256 ♏	250 "	5
Bicarb. Sodium . .	512 gr.	512 "	10
Glycerin . . .	12 fl. ʒ	6,840 "	134
Peppermint Water . .	2 *O*	14,092 "	286

*** Mistura Sennæ Composita.** *Compound Mixture of Senna.*

SYN. *Black Draught.*

¶ The * Infusum Sennæ Compositum might receive this title.

Monarda (*d*).—**Morphia.**—**Morphiæ Acetas.**—*** Morphiæ Hydrobromas.**—**Morphiæ Hydrochloras** (instead of: *Murias*).—**Morphiæ Sulphas.**—**Moschus.**

Mucilago Acaciæ. *Mucilage of Acacia.*

Take of	Gum Arabic, in small fragments, *one part*	1
	Water, *a sufficient quantity*	q. s.

Wash the Gum Arabic with cold Distilled Water, then add to it Distilled Water, *two parts* . . . . . 2 agitate it occasionally, until it is dissolved, and strain.

¶ The spec. grav. of mucilage thus prepared is 1.136–1.140 (*Flückiger*), or 1.132–1.133 (*Hirsch*), according to the *Germ. Pharm. Rep.*

*** Mucilago Chondri.** *Mucilage of Irish Moss.*

Take of Irish Moss, *one part* 1
Water, *a sufficient quantity* . . . . . q. s.

Wash the Irish Moss with cold Water thoroughly; then boil it with Water, *sixty-four parts* . . . . . 64 for half an hour, strain it while hot, and boil it down, until it weighs *forty parts* 40

This mucilage should be prepared only when wanted for use.

¶ This mucilage forms, when very slightly warmed, an excellent basis for emulsions of cod-liver, and other oils.

Mucilago Sassafras Medullæ (*d*). *Mucilage of Sassafras Pith.*

Take of Sassafras Pith, *one part* 1
Water, *sixty parts* 60

Macerate for 3 hours and strain.

Mucilago Tragacanthæ. *Mucilage of Tragacanth.*

Take of Tragacanth, *one part* 1
Glycerin, *three parts* 3
Water, *twelve parts* 12

Heat the Glycerin and Distilled Water to boiling, add the Tragacanth, and macerate it for 24 hours, occasionally stirring, and restoring any loss of weight by the addition of Distilled Water. Then beat the mixture so as to render it of uniform consistence, and strain forcibly through muslin.

¶ The glycerin is added to prevent it from drying too hard (*Maisch*).

Mucilago Ulmi. *Mucilage of Slippery Elm Bark.*

Take of Slippery Elm Bark, sliced and bruised, *one part* . . . 1
Boiling Water, *fifteen parts* 15

Macerate for 2 hours in a covered vessel, and strain.

Mucuna (*d*).—**Myristica.**—**Myrrha.**—**Nectandra.**—**Nux Vomica.**—**Olea** (as title of the whole class; see after *Oleoresina Zingiberis*).

*** Oleata.** *Oleates.*

¶ The title *Oleas*, plur. *Oleates*, which was first proposed, may be objected to as a name for this class of preparations, as they are not definite chemical salts, but solutions of the salts in an excess of oleic acid. Therefore the title *Oleatum*, plur. *Oleata*, appears to be more appropriate.

***Oleatum Aconitiæ.** *Oleate of Aconitia.*

Take of Aconitia, *two parts* 2
Purified Oleic Acid, *ninety-eight parts* 98

Rub the Aconitia carefully with a small quantity of the Oleic Acid in a warm mortar to a smooth paste, then add the remainder of the Oleic Acid, set the mortar in a moderately warm place, and triturate occasionally until the Aconitia is dissolved.

***Oleatum Hydrargyri.** *Oleate of Mercury.*

Take of Yellow Oxide of Mercury, *ten parts* 10
Purified Oleic Acid, *ninety parts* 90

Upon the Oleic Acid, contained in a mortar, gradually sprinkle the Oxide of Mercury, previously deprived of every trace of moisture by drying, and incorporate it thoroughly with the Oleic Acid. Then triturate the mixture frequently until the Oxide of Mercury is dissolved.

***Oleatum Morphiæ (5%).—* O. Quiniæ (25%).—* O. Veratriæ (2%).**

¶ To be prepared like *Oleatum Aconitiæ.*

Oleoresinæ. *Oleoresins.*

¶ Dr. E. R. Squibb authorizes us to state that Oleoresins can be equally well made by the use of Stronger Alcohol, instead of Ether; and that all should be made to represent the drug in a definite known proportion, uniform for the whole class.

Oleoresina Capsici. *Oleoresin of Capsicum.*

Take of Capsicum, in fine powder, *ten parts* 10
Ether, *a sufficient quantity* . . . . . q. s.

Put the Capsicum into a cylindrical percolator, provided with a stop-cock, and arranged with cover and receptacle for volatile liquids, press it firmly, and gradually pour Ether upon it, until the percolate, which must be allowed to pass slowly, weighs *fifteen parts* 15

Recover the greater part of the Ether by distillation on a water-bath, and expose the residue, in a capsule, until the remaining Ether has evaporated. Lastly pour off the liquid portion, transfer the remainder to a strainer, and when the fatty matter on the latter has been completely drained, mix all the liquid portions together, and keep them in a well-stoppered bottle.

¶ Formula slightly improved after Prof. Maisch's suggestions.

Oleoresina Cubebæ. *Oleoresin of Cubebs.*

Take of Cubebs, in fine powder, *ten parts* 10
Ether, *a sufficient quantity* . . . . . q. s.

Put the Cubebs . . . (*follow the preceding formula, to*) . . . evaporated. Transfer the remainder to a close vessel, and allow it to stand until it ceases to deposit a waxy and crystalline matter. Lastly pour off the clear liquid, and keep it in a well-stoppered bottle.

Oleoresina Filicis. *Oleoresin of Male Fern.*

Take of Male Fern, in fine powder, *ten parts* 10
Ether, *a sufficient quantity* . . . . . q. s.

Put the Male Fern . . . (*follow the formula for Oleoresin of Capsicum, to*) . . . evaporated. Lastly keep the Oleoresin in a well-stoppered bottle.

Oleoresina Lupulinæ. *Oleoresin of Lupulin.*

Take of Lupulin, *ten parts* 10
Ether, *a sufficient quantity* . . . . . q. s.

Put the Lupulin . . . (*as before*) . . . evaporated. Lastly keep the Oleoresin in a wide-mouthed bottle, well-stoppered.

Oleoresina Piperis. *Oleoresin of Black Pepper.*

Take of Black Pepper, in fine powder, *ten parts* 10
Ether, *a sufficient quantity* . . . . . q. s.

Put the Black Pepper . . . (*as before*) . . . evaporated, and the deposition of crystals of piperin has ceased. Lastly separate the Oleoresin from the piperin by expression through a muslin strainer, and keep it in a well-stoppered bottle.

Oleoresina Zingiberis. *Oleoresin of Ginger.*

Take of Ginger, in fine powder, *ten parts* 10
Ether, *a sufficient quantity* . . . . . q. s.

Put the Ginger . . . (*as before*) . . . evaporated. Lastly keep the Oleoresin in a well-stoppered bottle.

¶ There is no need of using alcohol (as in the present U. S. Ph.) to displace the ether, for the purpose of obtaining a certain amount of percolate. Those who make such preparations will, of course, displace the menstruum left in the drug, and recover it for further uses, if possible.

Olea. *Oils.*

¶ This is to be a general title of the whole class. Definitions are to be given of Fixed Oils, both of organic and of mineral origin, and of Volatile Oils, with general methods of detecting adulterations.

Oleum Æthereum. *Ethereal Oil.*

Take of Alcohol ("Strong. Alc."), *twenty-four parts* 24
Sulphuric Acid, *fifty-four parts* 54
Distilled Water, *one part* 1
Stronger Ether, *a sufficient quantity* . . . . . q. s.

¶ Directions same as at present.

Present Formula.			Approximations.		
Strong. Alcohol . .	2 *O*	11,904 grs.	11,900	120	24
Sulphuric Acid .	55 ℥	26,400 "	26,400	270	54
Distilled Water . .	1 fl. ℥	456 "	500	5	1
Strong. Ether . .	q. s.	q. s	q. s.	q. s.	q. s.

Oleum Amygdalæ Amaræ.—O. Amygdalæ Expressum.—O. Anisi.—*O. Aurantii Corticis.—*O. Aurantii Florum.—O. Bergamii.

***Oleum Cadinum.** *Oil of Cade.*

¶ Oil of Cade is largely used in this country, in regular practice, for the treatment of certain skin diseases. The source of the commercial article has been considered doubtful by recent authorities (see *Pharmacographia* [2], p. 623). The writer has, however, lately ascertained that it is, and has been, manufactured from the wood of one (or more) species of *Juniperus* at Nimes, in Southern France.

Oleum Cajuputi.—O. Camphoræ.—O. Cari.—O. Caryophylli.—*O. Cassiæ.

¶ It is proposed to use this term to denominate the oil obtained from Chinese Cinnamon. See *Cassia*.

Oleum Chenopodii.—O. Cinnamomi.

¶ This is restricted to mean only the Oil from Ceylon Cinnamon.

Oleum Copaibæ.—O. Coriandri.—O. Cubebæ.—O. Erigerontis Canadensis.—*O. Eucalypti (from *Eucalyptus globulus* Labill.).**—O. Fœniculi.—O. Gaultheriæ.**

***Oleum Gossypii Seminis.** *Cotton-Seed Oil.*

¶ Cotton-seed Oil has been used, without doubt, to a large extent already under the guise of other names. When refined, it is a beautiful oil, and may be used for a variety of purposes. It cannot replace olive oil for *all* purposes, because it partly belongs to the drying oils, but for certain purposes it is far superior to olive oil, as it is free from odor and taste, and greatly cheaper. See *Linimentum Camphoræ*; *Linimentum Ammoniæ*; *Unguentum Diachylon*.

Oleum Hedeomæ.—O. Juniperi.—O. Lavandulæ.—O. Limonis.—O. Lini.—O. Menthæ Piperitæ.—O. Menthæ Viridis.—O. Monardæ (*d*).**—Oleum Morrhuæ.—O. Myristicæ.—O. Olivæ.—O. Origani** (*d ?*).

¶ The commercial Oil of Origanum is generally (or always) Oil of Thyme; the *Pharmacographia* [2], p. 487, says that true Oil of Origanum was never found in commerce, so far as the authors could ascertain.

***Oleum Paraffini** (see *Unguentum Paraffini*).

Oleum Phosphoratum. *Phosphorated Oil.*

Take of Phosphorus, in as large and few pieces as possible, *one part* 1
Cod-Liver Oil, *ninety-nine parts* 99

Introduce the Cod-Liver Oil into a bottle which will be about three-fourths filled with it. Fit two corks to the bottle, lay one aside, and fit the other with

two glass tubes, one shorter, and the other reaching to very near the surface of the Oil. Then pass a current of dry carbonic acid gas through the bottle for about fifteen minutes, or until the air is completely expelled. Having rapidly weighed the phosphorus, previously cooled by means of ice, and having thoroughly dried it with blotting paper, introduce it quickly into the bottle, close the latter with the unperforated cork, and set it into tepid water. Apply a gentle heat until the phosphorus has melted, and after frequent agitation, is entirely dissolved. Then again connect the bottle with the reservoir of carbonic acid gas, and while a sufficient volume of the latter is allowed to pass into the bottle, transfer the Phosphorated Oil, by means of a glass siphon provided with a stop-cock, into small vials, previously rinsed with stronger ether and not dried, of the capacity of 30 cubic centimetres, or 1 fluid ounce, which must be tightly closed and kept in a dark, cool place.

¶ This is Dr. Squibb's formula in a condensed form. Oil of Almonds has been stated by Dr. J. Ashburton Thompson to be an improper vehicle for phosphorus. His authority has since been doubted, and Dr. Squibb now uses Almond Oil. The *Germ. Pharm. Rep.* recommends to dissolve the phosphorus in carbon disulphide, and then to add it to the oil. Applied to our formula, and improving it by directing the use of carbonic acid gas, it would be about as follows:

Take of	Phosphorus, *one part*	1
	Bisulphide of Carbon, *five parts*	5
	Cod-Liver Oil, *ninety-nine parts*	99

Dissolve the Phosphorus, with great caution, in the Bisulphide of Carbon, add the solution to the Cod-Liver Oil, contained in a flask loosely stoppered, and heat the latter at a temperature of 50° C. (= 122° F.), while a slow stream of carbonic acid gas is allowed to pass over the surface of the Oil, until all odor of the Bisulphide of Carbon has disappeared.

*** Oleum Picis Liquidæ.—O. Pimentæ.—O. Ricini.**

¶ The *Germ. Pharm. Rep.* remarks to the latter: Spec. grav. 0.962 at 21° C. It makes a clear mixture with glacial acetic acid and with absolute alcohol, and yields a clear solution when mixed with 2 parts of alcohol of 0.838 at 25° C. (*Flückiger*).

Oleum Rosæ.—O. Rosmarini.—O. Rutæ (*d*).—**O. Sabinæ.—* O. Santali.—O. Sassafras.—O. Sesami.—O. Sinapis.—O. Succini.—O. Succini Rectificatum.—O. Tabaci** (*d*).—**O. Terebinthinæ.—O. Theobromæ.—O. Thymi** (See *Ol. Origani*).—**O. Tiglii.—O. Valerianæ.**

Opium. *Opium.*

The juice, obtained by incision of the unripe capsules of *Papaver somniferum* L., grown in Asia Minor, and inspissated by spontaneous evaporation.

Opium, when dried at 100° C. (=212° F.) until it ceases to lose weight, should contain at least 10 per cent [and should be made to contain not over 12 per cent of morphia?], by the following process:

Take of Opium, in powder and dried as above required, 6½ grammes (100.3 grains); lime, freshly slaked with one-third its weight of water, 3 grammes (46.3 grains); chloride of ammonium, in powder, 4½ grammes (69.4 grains); benzol

(see list of reagents), 50 cubic centimetres (the volume of 772 grains of water); washed ether (list of reagents), 6 cubic centimetres (the volume of 92 grains of water); distilled water, 70 cubic centimetres (the volume of 1,080 grains of water) or a sufficient quantity.

Place the Opium in a paper filter of 4 inches (10 centimetres) diameter in a small funnel; add benzol to fill and cover the powder, and when the filtrate begins to drop, close the neck of the funnel, and leave to macerate one hour. Then percolate, by adding the remainder of the benzol, and dry the filter and its contents at a gentle heat till the odor of benzol has disappeared. Carefully transfer the contents of the filter (which is to be preserved) to an exactly weighed flask of the capacity of 100 to 120 cubic centimetres, add the lime with 20 to 30 cubic centimetres of distilled water, agitate for several minutes, then stopper the flask and shake till a uniform mixture is obtained.

Add distilled water, enough to make the contents of the flask weigh 74½ grammes (1,149.7 grains). Digest, by immersing the flask in nearly boiling water, with occasional agitation, for one hour. Cool, and add distilled water to restore the exact weight of 74.5 grammes. Filter, through the paper filter previously used, into a test-tube or other cylindrical glass of the capacity of 80 or 90 cubic centimetres, and previously marked for the volume of 50 cubic centimetres (771.6 grains of water), until the filtered liquid reaches the mark. Should the filtrate lack a few drops of the required volume, the filter-contents are gently pressed to bring the liquid to the mark, but in any case no more than this volume is received. To the filtered liquid (now representing 5 grammes of the Opium) add 8 drops of the benzol and 3 cubic centimetres of the washed ether, then stopper the tube and agitate. Add the chloride of ammonium, and when it has dissolved, agitate again, and set aside in a cool place for 3 to 3½ hours. The crystalline deposit is now gathered by filtration in a small filter, previously weighed and moistened, the deposit collected and the filter washed with several portions of distilled water, using but a few drops in each portion. The filter-contents are then dried at about 50° C. (122° F.) washed with the remainder of the washed ether (3 cubic centimetres), dried again and weighed.

The weight represents the morphia in 5 grammes (77.16 grains) of opium. The per cent is found by multiplying the weight in grammes by 20, or by dividing the weight in grains by 0.7716.—*A. B. Prescott.*

¶ Opium should be limited both in minimum and maximum strength (*Prescott*. See the complete paper of this author in *Proceed. Am. Pharm. Asso.*, vol. 26, 807). It would be desirable to exactly fix the strength, say at 10 per cent, and to give directions how any richer opium should be reduced to this strength. If only opium of 10% morphia strength were used in pharmaceutical preparations, it would always be an easy matter to know the exact morphia strength of the different preparations. The "List of Reagents" mentioned above refers to the list which is proposed to be added to the U. S. Ph., and not to this Report.

The *Germ. Pharm. Rep.* contains the following process of Prof. Flückiger, who has kindly furnished the writer with a corrected copy of the same:

15 grammes of opium are dried at 100° C. (212° F.) until it ceases to lose weight. The loss represents the amount of water. The dry opium is powdered, and 8 grammes of the powder repeatedly extracted with (strong.) ether, whereby narcotine is removed

The residue is deprived of ether by exposure to air, mixed with 80 grammes of water in a closed flask, and frequently shaken during 12 hours. The mixture is then poured upon a plaited filter of the diameter of 12.5 centimetres. Of the filtrate, which usually measures 65 to 68 cubic centimetres, 42.5 grammes [representing half the weight of the water: $\frac{80}{2}$ =40, and half of the soluble matter which has been dissolved out of 8 grammes of opium, namely, 4.8 to 5.2, divided by 2] are transferred to a small tared flask of the capacity of not over 100 cc. 12 grammes of alcohol of 0.815 spec. grav. at 15° C., and 10 grammes of ether are now added, which do not make the solution turbid. Finally 1.5 gm. of water of ammonia, spec. grav. 0.960, are introduced, and the contents agitated, whereby a colorless ethereal layer separates. The flask is now well closed, and set aside for 24 hours. A small double-plaited filter of 10 cm. diameter is then moistened with a mixture of alcohol and ether, in the proportions given above, and upon it are emptied the contents of the flask, in which the adhering crystals have previously been detached by agitation. When the mother liquid has passed, the crystals are washed with 10 grammes of ether-alcohol (made as above described), and finally with 10 grammes of pure ether. They are then removed from the filter back to the flask in which they are dried and weighed. The crystals have the composition: $C_{17}H_{19}NO_3.H_2O$.

Origanum.—**Os** (*d*).—**Ovum** (*d*).—**Panax** (*d*).—**Papaver.**—* **Paraffinum** (see *Unguenta*).

* **Paracotoinum.** *Paracotoin.*

¶ *Germ. Pharm. Rep.:* A light powder, of a light-yellow color, a very pungent taste, and a peculiar odor inciting to sneezing. It is with difficulty soluble in water, easily in alcohol, and melts in ether. On warming it with concentrated nitric acid, it yields a blood-red solution. Its solution in alcohol, mixed with ferric chloride solution, assumes a dark-violet color (*Jobst*).

Pareira.—**Pepo.**

* **Pepsinum.** *Pepsin.*

A peculiar digestive principle of the gastric juice of warm-blooded animals, usually obtained from the stomachs of the pig, sheep, or calf.

Char.—A fine, almost white, non-hygroscopic powder, without animal odor or taste. 1 part is easily soluble in 50 parts of water at 25° C. (=77° F.) with only slight opalescence, so that printed words of the size of the titles in the Pharmacopœia, may still be plainly distinguished through a layer of 1 cm. in thickness. On the addition of 2 drops of hydrochloric acid, the liquid becomes more pellucid, so that print of the kind mentioned before may still be recognized through a layer of 10 cm. in thickness. 1 part of pepsin dissolved in 1,500 parts of water and 25 parts of hydrochloric acid, should dissolve 100 parts of egg albumen, boiled in the egg for 4 minutes and cut into small pieces ["of the size of lentils"], after repeated brisk agitation at a temperature of 40° C. (=104° F.) maintained during 4 to 6 hours. The resulting liquid has a faint opalescence. 1 part of pepsin should dissolve 250 parts of blood-fibrin, previously washed and swelled up in 2,000 parts of water mixed with 25 parts of hydrochloric acid, within 4 hours, under frequent brisk agitation, at a temperature of 40° C. (=104° F.) to a turbid liquid.—*Germ. Pharm. Rep.*

¶ The size of titles referred to above is understood to be that used in the Germ. Pharm., and about corresponds to what is known here as Pica Aldine.

*** Pepsinum Saccharatum.** *Saccharated Pepsin.*

Pepsin mixed, while moist, with sugar of milk, and afterwards dried and powdered. The strength of the product should be so adjusted that 10 parts of it, dissolved in 150 parts of water and 3 parts of hydrochloric acid, will dissolve at least 120 parts of egg-albumen at a temperature of 40° C. (=104° F.) in 5 or 6 hours.

Petroselinum.—Phosphorus.—Physostigma.

*** Physostigmiæ Salicylas.** *Salicylate of Physostigmia.*

¶ Merck found this to be the most stable salt of this alkaloid, and most readily obtained in a pure state. The *Germ. Pharm. Rep.* gives the following characters: Colorless, shining, needle-shaped, or short columnar crystals, apparently of a rhombic form. Soluble in 130 parts of water at ordinary temperature (14°–16° C.), much more readily in hot water. A solution of 1 part in 50 of hot water remains clear after cooling, even after standing for weeks, which may depend on the formation of a supersaturated solution. The crystallized salt keeps unaltered in the light for a long time, but its aqueous or alcoholic solutions, when exposed to diffused light, assume a reddish color in a few days. A 1% solution acts energetically on the pupil.

Phytolaccæ Bacca.—Phytolaccæ Radix.

*** Pilocarpiæ Hydrochloras.** *Hydrochlorate of Pilocarpia.*

¶ The *Germ. Pharm. Rep.* adds: Small white crystals, easily soluble in water and alcohol, scarcely soluble in ether and chloroform, of a faintly bitter taste, and somewhat hygroscopic. The aqueous solution, which is neutral, may be kept for some time unaltered, and contracts the pupil. With strong sulphuric acid it yields a yellow color, with nitric acid (of 1.400) a faintly green, and with sulphuric acic and potassium bichromate an emerald-green color. In its faintly acidified solution ammonia produces no precipitate. Solution of soda produces a cloudiness only in a concentrated solution.

*** Pilocarpus** (*Jaborandi*).

Pilulæ. *Pills.*

¶ In the present U. S. Ph. the list of *Pilulæ*, or Pills, is followed by two formulæ entitled *Pilula Ferri Carbonatis* and *Pilula Saponis Co.*, where the word *Pilula* means "pill-mass." Although these two formulæ should be placed at the beginning of this chapter if the alphabetical arrangement is strictly adhered to, yet in practice it will be preferable to insert them in the list just as if the title were "*Pilulæ*."

In order to facilitate the use of the formulæ given it has been thought advantageous to accompany each formula with a statement of actual working quantities. In future editions of the U. S. Ph., when the medical and pharmaceutical professions will have become more thoroughly used to the system of parts by weight, this may not be necessary, but at the present time, which may be called a period of transition, additions of this kind will not only be excusable, but even advisable.

In giving the corresponding equivalents of apothecaries' and decimal weights, only the nearest approximations of the latter could be given. For instance, under Pilulæ Ferri Iodidi it is stated that on substituting "drachm" for "part," the mass will have to be divided into 2,000 pills. Now, if "gramme" is substituted for "part," the actual number of pills (of ¼ grain iodine each) should be nearly 514, which is an inconvenient number. Therefore the figure 500 was chosen instead of 514. In smaller figures the deviation from the true value becomes so small as to be insignificant.

It is not deemed advisable to recognize, officially, any particular coating for pills.

Pilulæ Aloes. *Pills of Aloes.*

Take of	Purified Aloes, in fine powder, *four parts*	4
	Soap, in fine powder, *four parts*	4

Beat them together with water into a mass to be divided into pills, so that each will contain 13 centigrammes (0.13 gm.) or 2 grains of Aloes, and the other ingredient in proportion.

Substituting *gramme* for *part*, the mass will make 30 pills.

Substituting *drachm* for *part*, the mass will make 120 pills.

Pilulæ Aloes et Asafœtidæ. *Pills of Aloes and Asafœtida.*

Take of	Purified Aloes, in fine powder, *three parts*	3
	Asafœtida, *three parts*	3
	Soap, in fine powder, *three parts*	3

Beat them together with water into a mass to be divided into pills, so that each will contain 10 centigrammes (0.10 gm.) or 1½ grains of Aloes, and the other ingredients in proportion.

Substituting *gramme* for *part*, the mass will make 30 pills.

Substituting *drachm* for *part*, the mass will make 120 pills.

¶ In order to get more simple proportions, the quantity of Aloes in each pill is raised from 1⅓ to 1½ grains.

Pilulæ Aloes et Mastiches. *Pills of Aloes and Mastic.*

Take of	Purified Aloes, in fine powder, *four parts*	4
	Mastic, in fine powder, *one part*	1
	Red Rose, in fine powder, *one part*	1

Beat them together with water into a mass to be divided into pills, so that each will contain 13 centigrammes (0.13 gm.) or 2 grains of Aloes, and the other ingredients in proportion.

Substituting *gramme* for *part*, the mass will make 30 pills.

Substituting *drachm* for *part*, the mass will make 120 pills.

Pilulæ Aloes et Myrrhæ. *Pills of Aloes and Myrrh.*

Take of	Purified Aloes, in fine powder, *four parts*	4
	Myrrh, in fine powder, *two parts*	2
	Aromatic Powder, *one part*	1
	Simple Syrup, *a sufficient quantity*	q. s.

Beat the powders together with Syrup into a mass to be divided into pills, so that each will contain 13 centigrammes (0.13 gm.) or 2 grains of Aloes, and the other ingredients in proportion.

Substituting *gramme* for *part*, the mass will make 30 pills.

Substituting *drachm* for *part*, the mass will make 120 pills.

¶ The present U. S. Ph. directs common "Socotrine Aloes" to be used in preparing the three first mentioned pills, and "Purified Aloes" in preparing the last formula.

As this was probably not intended, "Purified Aloes" was substituted in all cases where this drug occurs in pills or powders.

Pilulæ Antimonii Compositæ. *Compound Pills of Antimony.*

SYN. *Plummer's Pills.*

Take of	Sulphurated Antimony, *one part*	1
	Mild Chloride of Mercury, *one part*	1
	Guaiac, *two parts*	2
	Molasses, *two parts*	2

Rub the Sulphurated Antimony first with the Mild Chloride of Mercury, and then with the Guaiac and Molasses into a mass to be divided into pills, so that each will contain 3 centigrammes (0.03 gm.) or ½ grain of Sulphurated Antimony, and the other ingredients in proportion.

Substituting *gramme* for *part*, the mass will make 30 pills.

Substituting *drachm* for *part*, the mass will make 120 pills.

Pilulæ Asafœtidæ. *Pills of Asafœtida.*

Take of	Asafœtida, *six parts*	6
	Soap, in fine powder, *two parts*	2

Beat them together with water into a mass to be divided into pills, so that each will contain 20 centigrammes (0.20 gm.) or 3 grains of Asafœtida, and the other ingredient in proportion.

Substituting *gramme* for *part*, the mass will make 30 pills.

Substituting *drachm* for *part*, the mass will make 120 pills.

Pilulæ Catharticæ Compositæ. *Compound Cathartic Pills.*

Take of	Compound Extract of Colocynth, *sixteen parts*	16
	Extract of Jalap, in fine powder, *twelve parts*	12
	Mild Chloride of Mercury, *twelve parts*	12
	Gamboge, in fine powder, *three parts*	3

Mix the powders together, then with water form a mass to be divided into pills, so that each will contain 9 centigrammes (0.09 gm.) or 1½ grains of Compound Extract of Colocynth, and the other ingredients in proportion.

Substituting *gramme* for *part* the mass will make 180 pills.

Substituting *scruple* for *part*, the mass will make 240 pills.

Pilulæ Copaibæ. *Pills of Copaiba.*

Take of	Copaiba, *sixteen parts*	16
	Magnesia, recently prepared, *one part*	1

Mix them thoroughly together and set the mixture aside until it concretes into a pilular mass, then divide it into pills, so that each will contain 33 centigrammes (0.33 gm.), or 5 grains of Copaiba.

Substituting *gramme* for *part*, the mass will make 50 pills.
Substituting *drachm* for *part*, the mass will make 200 pills.

¶ In order to obtain more simple proportions, the quantity of Copaiba in each pill was raised from 0.31 gr. or 4.8 grains to 0.33 gm. or 5 grains.

Pilula Ferri Carbonatis. *Pillmass of Carbonate of Iron.*

Take of	Sulphate of Iron, *sixteen parts*	16
	Carbonate of Sodium, *eighteen parts*	18
	Clarified Honey, *six parts*	6
	Sugar, in coarse powder, *four parts*	4
	Boiling Water, *sixty parts*	60
	Simple Syrup, *a sufficient quantity*	q. s.

Dissolve the salts separately, each in *one-half* of the Water, and having added Simple Syrup, *five parts* . . . . . 5 to the solution of the iron salt, filter both solutions. When cold, mix them in a bottle just large enough to hold them, or add *sufficient* recently boiled, cold Water to completely fill it, close it accurately with a stopper, agitate it and set it aside in a cool place, so that the carbonate of iron may subside. Pour off the supernatant liquid, and having made a mixture of *twelve parts* of cold Water, recently boiled, and *one part* of Simple Syrup, wash the precipitate with the mixture until the washings no longer have a saline taste. Drain the precipitate on a flannel cloth and express as much of the Water as possible. Lastly, mix the precipitate intimately with the Clarified Honey and Sugar, and by means of a water-bath, evaporate the mixture, constantly stirring, until it is reduced to *sixteen parts* . . 16

Pilulæ Ferri Compositæ. *Compound Pills of Iron.*

Take of	Myrrh, in fine powder, *two parts*	2
	Carbonate of Sodium, *one part*	1
	Sulphate of Iron, *one part*	1
	Simple Syrup, *a sufficient quantity*	q. s.

Rub the Myrrh, first with the Carbonate of Sodium, and afterwards with the Sulphate of Iron, until they are thoroughly mixed; then beat them, with Simple Syrup, into a mass, to be divided into pills, so that each will contain 10 centigrammes (0.10 gm.) or 1½ grains of Myrrh, and the other ingredients in proportion.

Substituting *gramme* for *part*, the mass will make 20 pills.
Substituting *drachm* for *part*, the mass will make 80 pills.

Pilulæ Ferri Iodidi. *Pills of Iodide of Iron.*

Take of	Iodine, *twenty-five parts*	25
	Iron, in the form of fine wire, and cut in pieces, *ten parts*	10
	Sugar, in fine powder, *sixteen parts*	16
	Liquorice Root, in fine powder, *sixteen parts*	16

	Extract of Liquorice, in fine powder, *four parts*	4
	Gum Arabic, in fine powder, *four parts*	4
	Reduced Iron, *eight parts*	8
	Balsam of Tolu, *five parts*	5
	Stronger Ether, *four parts*	4
	Water, *sixty parts*	60

Mix the Iodine with Water, *fifty parts* 50
in a glass flask, and gradually add the Iron, agitating until the solution has become of a light pea-green color; then filter into a porcelain capsule containing the Reduced Iron, and add the remainder of the Water in order to wash the filter. Evaporate the solution until a pellicle forms, and, adding the remaining powders previously mixed together, continue the evaporation, by means of a water-bath, with constant stirring, until the mixture is reduced to a pilular consistence. Lastly, divide the mass into pills, so that each will represent 5 centigrammes (0.05 gm.) or ¾ grains of Iodine, and the other ingredients in proportion.

Dissolve the Balsam of Tolu in the Ether, shake the pills with the solution until they are uniformly coated, and put them on a plate to dry, occasionally stirring them until the drying is completed. Keep them in a well-stoppered bottle.

Substituting *gramme* for *part*, the mass will make 500 pills.

Substituting *drachm* for *part*, the mass will make 2,000 pills.

Char.—These pills are devoid of the smell of iodine; and distilled water, rubbed with them, and filtered, does not color solution of starch, or imparts to it at most only a faint blue tint.

¶ The formula of the present U. S. Ph. produces pills, each of which corresponds to 0.051 gm. or 15-19ths of one grain of Iodine. The deviation from the above formula is therefore insignificant.

Pilulæ Galbani Compositæ. *Compound Pills of Galbanum.*

Take of	Galbanum, *three parts*	3
	Myrrh, *three parts*	3
	Asafœtida, *one part*	1
	Simple Syrup, *a sufficient quantity*	q. s.

Beat them together into a mass, to be divided into pills, so that each will contain 10 centigrammes (0.10 gm.), or 1½ grains of Galbanum, and the other ingredients in proportion.

Substituting *gramme* for *part*, the mass will make 30 pills.

Substituting *drachm* for *part*, the mass will make 120 pills.

Pilula Hydrargyri. *Pillmass of Mercury. Blue Mass. Blue Pills.*

Take of	Mercury, *sixteen parts*	16
	Sugar, *fifteen parts*	15
	Liquorice Root, in fine powder, *eight parts*	8

	Honey, *three parts*	3
	Rose Water, *four parts*	4
	Red Rose, in fine powder, *two parts*	2
	Distilled Water, *a sufficient quantity*	q. s.

Triturate the Liquorice Root with the Mercury and Honey. Gradually add the Rose Water, and continue the trituration until globules of Mercury cease to be visible under a lens magnifying 10 [?] diameters. Then add the Sugar and Red Rose, and rub the whole thoroughly together until a uniform, plastic mass results. If the mass becomes too dry during trituration, add a little Distilled Water, and when the whole is thoroughly mixed, expose the mass to the air, in a thin layer, until it is of the proper consistence.

¶ Instead of the heading "Pilulæ Hydrargyri," it is thought better to use the expression, "Pilula Hydrargyri," as the mass is usually kept in stock *as such*, and physicians are in the habit of ordering a varying number of *grains* of the mass. The present U. S. Ph. directed the mass to be divided into pills, representing 1 grain of mercury each, or 3 grains of the mass. The process of the present U. S. Ph. does not accomplish the extinction of the mercury thoroughly; the modification proposed by Prof Maisch is, therefore, recommended.

Pilulæ Opii. *Pills of Opium.*

Take of	Opium, in fine powder, *four parts*	4
	Soap, in fine powder, *one part*	1

Beat them together with water, into a mass, to be divided into pills, so that each will contain 6 centigrammes (0.06 gm.), or 1 grain of Opium.

Substituting *gramme* for *part*, the mass will make 60 pills.

Substituting *drachm* for *part*, the mass will make 240 pills.

*** Pilulæ Podophylli Compositæ.** *Compound Pills of Podophyllum.*

Take of	Resin of Podophyllum, *two parts*	2
	Alcoholic Extract of Hyoscyamus, *eight parts*	8
	Capsicum, in fine powder, *eight parts*	8
	Sugar of Milk, in fine powder, *eight parts*	8
	Gum Arabic, in fine powder, *two parts*	2
	Glycerin, *one part*	1
	Simple Syrup, *a sufficient quantity*	q. s.

Mix the Resin of Podophyllum with the Capsicum, Sugar of Milk, and Gum Arabic by thorough and prolonged trituration; then gradually add the Extract of Hyoscyamus, Glycerin, and enough Simple Syrup to form a uniform, plastic mass, to be divided into pills, so that each will contain 16 milligrammes (0.016 gm.), or ¼ grain of Resin of Podophyllum, and the other ingredients in proportion.

Substituting *gramme* for *part*, the mass will make 120 pills.

Substituting *scruple* for *part*, the mass will make 160 pills.

¶ Pills containing Resin of Podophyllum, with correctives and carminatives, are very frequently demanded, and it is time to have some regular standard, as they are often prescribed very indefinitely under the name "Pil. Podophylli (Co.)." The above

formula is that proposed by Dr. E. R. Squibb. The proportion of glycerin in the original formula would be, in parts by weight, *three parts*, which has been reduced to *one* part, this being believed to be sufficient. Dr. Squibb directed them to be dried by exposure to air, whereby the water of the syrup would evaporate, and the glycerin would alone remain as moistening and binding substance. If the pills are made in quantity, to be kept in stock, *three* parts of glycerin may be used, with subsequent drying. But as these pills are often to be made ex tempore for immediate use, a smaller quantity of glycerin is preferable.

Pilulæ Quiniæ Sulphatis. *Pills of Sulphate of Quinia.*

Take of	Sulphate of Quinia, *six parts*	6
	Tartaric Acid, *one part*	1
	Glycerin, *one part*	1

Beat them together into a mass, to be divided into pills, so that each will contain 6 centigrammes (0.06 gm.) or 1 grain of Sulphate of Quinia.

Substituting *gramme* for *part*, the mass will make 90 pills.

Substituting *drachm* for *part*, the mass will make 360 pills.

¶ The Honey which is directed by the present U. S. Ph. as excipient is replaced by Tartaric Acid and Glycerin.

Pilulæ Rhei. *Pills of Rhubarb.*

Take of	Rhubarb, in fine powder, *six parts*	6
	Soap, in fine powder, *two parts*	2

Beat them together with water into a mass, to be divided into pills, so that each will contain 20 centigrammes (0.20 gm.), or 3 grains of Rhubarb.

Substituting *gramme* for *part*, the mass will make 30 pills.

Substituting *drachm* for *part*, the mass will make 120 pills.

Pilulæ Rhei Compositæ. *Compound Pills of Rhubarb.*

Take of	Rhubarb, in fine powder, *twenty-four parts*	24
	Purified Aloes, in fine powder, *eighteen parts*	18
	Myrrh, in fine powder, *twelve parts*	12
	Oil of Peppermint, *one part*	1

Beat them together with water into a mass, to be divided into pills, so that each will contain 13 centigrammes (0.13 gm.), or 2 grains of Rhubarb, and the other ingredients in proportion.

Substituting *gramme* for *part*, the mass will make 180 pills.

Substituting *scruple* for *part*, the mass will make 240 pills.

Pilula Saponis *et Opii (*d*). *Pillmass of Soap and Opium.*

Take of	Opium, in fine powder, *one part*	1
	Soap, in fine powder, *four parts*	4

Beat them together with water to form a pilular mass.

¶ This pillmass bears, in the present U. S. Pharm., the deceptive title: *Pilula*

Saponis Compositæ. The argument has been advanced that the omission of the word "Opium" enables the physician to prescribe an opiate without the knowledge of the patient. But this is certainly wrong and the title should be altered as above; or, what is preferable, the preparation should be dropped altogether.

Pilulæ Scillæ Compositæ. *Compound Pills of Squill.*

Take of	Squill, in fine powder, *one part*	1
	Ginger, in fine powder, *two parts*	2
	Ammoniac, in fine powder, *two parts*	2
	Soap, in fine powder, *three parts*	3
	Simple Syrup, *a sufficient quantity*	q. s.

Mix the powders; then beat them with Simple Syrup into a mass, to be divided into pills, so that each will contain 3 centigrammes (0.03 gm.) or ½ grain of Squill, and the other ingredients in proportion.

Substituting *gramme* for *part*, the mass will make 30 parts.

Substituting *drachm* for *part*, the mass will make 120 pills.

Pimenta.—Piper.—Pix Burgundica.—Pix Canadensis.—Pix Liquida.—Plumbi Acetas.—Plumbi Carbonas.—Plumbi Iodidum.—Plumbi Nitras.—Plumbi Oxidum.—Podophyllum.—Polygala Rubella (*d*).**—Potassa.—Potassa cum Calce.**

¶ Formula as at present, taking equal parts.

Potassii Acetas.—Potassii Bicarbonas.—Potassii Bichromas.—Potassii Bitartras.

Potassii Bromidum. *Bromide of Potassium.*

¶ To the tests is to be added, particularly, that 1 part must be soluble, to a colorless liquid, in 20 parts of diluted sulphuric acid (1: 5; spec. gr. 1,115).—*Germ. Pharm. Rep.*

Potassii Carbonas.—Potassii Carbonas Impura.—Potassii Carbonas Pura.—Potassii Chloras.

¶ This salt, when moderately ignited in a covered crucible, must leave 60.8% of chloride of potassium. This test also shows the presence of any nitrate of potassium. The salt must be free from chlorides.—*Germ. Pharm. Rep.*

Potassii Citras.—Potassii Cyanidum.—Potassii et Sodii Tartras.—Potassii Ferrocyanidum.—Potassii Hypophosphis.—Potassii Iodidum.

¶ In stating the solubility of this salt in alcohol, the spec. grav. of the latter is to be fixed exactly, since alcohols of 0.830 and 0.834 differ already greatly in their solvent powers on the salt. To detect bromide, 1 part of the salt is warmed with 40 parts of water on the water-bath, and the solution, after the addition of a little sulphate of copper, evaporated, in order to drive off the iodine which has been set free. This is repeated as long as any iodine escapes. The saline residue finally remaining must have a distinct but only faint green color. This is now gradually exhausted with small quantities of water, the liquid filtered from cuprous iodide, and the filtrate concentrated on the water-bath. If any bromine was present, the inner wall of the

capsule becomes gradually colored black from deposition of anhydrous cupric bromide, which latter may be quickly redissolved, by a drop of water, to a pale-green liquid, while on further evaporation the black rings again make their appearance. The salt must be free from recognizable traces of alkalies [*Hager*, in *Pharmac. Centralhalle*, 1879, 444, objects to this requirement, since traces of alkali are necessary to preserve the salt from turning yellow, which is owing to the presence of iodide of sodium, always accompanying the potassium salt]. To test successfully for iodic acid, it is necessary to dilute the solution of the salt sufficiently, and to add only a *few* drops of sulphuric acid. If iodic acid is present, a yellow color must appear *immediately*; if it only appears after awhile, this is produced by other causes than the presence of iodic acid.—*Germ. Pharm. Rep.*

Potassii Nitras.—Potassii Permanganas.

¶ To test this salt, proceed as follows: Dissolve it in water, add a few drops of alcohol, and boil, so as to completely reduce it. Then filter the liquid from the precipitate, and test the colorless alkaline filtrate in the usual manner for chlorides, nitrates and sulphates.—*Germ. Pharm. Rep.*

Potassii Sulphas.—Potassii Sulphis.—Potassii Sulphuretum (better *Sulphidum*).**—Potassii Tartras.—Prinos** (*d*).**—Prunus Virginiana.—Prunum.—*Pulsatilla.**

Pulveres Effervescentes. *Effervescing Powders.*

SYN. *Soda Powders.*

Take of Bicarbonate of Sodium, in fine powder, *six parts* . . 6

Divide it into such a number of parts, to be folded in blue paper, that each will contain 2 grammes (2.00 gm.) or 30 grains of the Bicarbonate. Then

Take of Tartaric Acid, in fine powder, *five parts* 5

Divide it into such a number of parts, to be folded in white paper, that each will contain 1 gramme and 70 centigrammes (1.70 gm.) or 25 grains of the Acid. Preserve the powders from moisture.

Pulveres Effervescentes Aperientes. *Effervescing Aperient Powders.*

SYN. *Seidlitz Powders.*

Take of Bicarbonate of Sodium, in fine powder, *eight parts* . . 8
Tartrate of Potassium and Sodium, in fine powder, *twenty-four parts* 24

Mix them intimately and divide the mixture into such a number of parts, to be folded in blue paper, that each part will contain 10 grammes and 50 centigrammes (10.50 gm.) or 160 grains of the mixed Salts. Then

Take of Tartaric Acid, in fine powder, *seven parts* 7

Divide it into such a number of parts, to be folded in white paper, that each part will contain 2 grammes and 27 centigrammes (2.27 gm.) or 35 grains of the Acid. Preserve the powders from moisture.

Pulvis Aloes et Canellæ. *Powder of Aloes and Canella.*

Take of Purified Aloes, in fine powder, *four parts* 4
Canella, in fine powder, *one part* 1

Rub them together until they are thoroughly mixed.

¶ Common Socotrine Aloes, which is directed by the present U. S. Ph., should be replaced by Purified Aloes.

* **Pulvis Antimonialis.** *Antimonial Powder.*

SYN. *James' Powder.*

Take of Oxide of Antimony, *one part* 1
Precipitated Phosphate of Calcium, *two parts* . . 2

¶ This is still much in use, and might be re-introduced into the U. S. Ph.

Pulvis Aromaticus. *Aromatic Powder.*

Take of Cinnamon, in fine powder, *two parts* 2
Ginger, in fine powder, *two parts* 2
Cardamom, deprived of the capsules and crushed, *one part* 1
Nutmeg, in coarse powder, *one part* 1

Triturate the Cardamom and Nutmeg with a portion of the Cinnamon; then add the remainder of the Cinnamon and the Ginger, and rub the whole together, until it forms a fine uniform powder.

¶ The present U. S. Ph. orders both the Cardamom and the Nutmeg "in fine powder," which is not practicable.

* **Pulvis Cinchoniæ Compositus.** *Compound Powder of Cinchonia.*

Take of Cinchonia, *twelve parts* 12
Bicarbonate of Sodium, *one part* 1
Sugar of Milk, in moderately fine powder, *sixty parts* . 60

Rub them together to a fine powder.

¶ This combination is said to be very useful, particularly as a tasteless febrifuge for children. It was originated by Dr. Sam. Ashhurst of Philadelphia, and appears to have sufficient merit to deserve a place in the U. S. Ph.

* **Pulvis Glycyrrhizæ Compositus.** *Compound Powder of Liquorice.*

SYN. *Kurella's Pectoral Powder.*

Take of Senna, in fine powder, *two parts* 2
Liquorice Root, in fine powder, *two parts* 2
Fennel, in fine powder, *one part* 1
Washed Sulphur, *one part* 1
Sugar, in fine powder, *six parts* 6

Rub them together until they are thoroughly mixed.

¶ This is so frequently used in regular practice, that it should by all means have a place in the U. S. Ph. The proportions are the same as those of the Germ. Ph.

Pulvis Ipecacuanhæ Compositus. *Compound Powder of Ipecacuanha.*

SYN. *Dover's Powder.*

Take of	Ipecacuanha, in fine powder, *one part*	1
	Opium, dried, and in fine powder, *one part*	1
	Sulphate of Potassium, in moderately coarse powder, *eight parts*	8

Rub them together into a very fine powder.

¶ Dover's Powder has always been prepared with Sulphate of Potassium. The original formula of Dr. Dover, published in 1733, contained: potassium nitrate, 4; potassium sulphate, 4 parts; ipecac, 1; liquorice, 1; opium, 1 part. The sulphate of potassium has probably no other advantage than to facilitate the trituration of the opium and ipecac. As the preparation has a somewhat disagreeable taste, Dr. H. G. Piffard recommends to use Sugar of Milk as a diluent. The therapeutic effects are said to be the same. The formula would then be:

Take of	Ipecacuanha, in fine powder, *one part*	1
	Opium, dried, and in fine powder, *one part*	1
	Sugar of Milk, in moderately coarse powder, *eight parts*	8

Rub them together into a very fine powder.

Pulvis Jalapæ Compositus. *Compound Powder of Jalap.*

Take of	Jalap, in very fine powder, *one part*	1
	Bitartrate of Potassium, in very fine powder, *two parts*	2

Rub them together until they are thoroughly mixed.

* **Pulvis Morphiæ Compositus.** *Compound Powder of Morphia.*

SYN. *Tully's Powder.*

Take of	Sulphate of Morphia, *one part*	1
	Camphor, *twenty parts*	20
	Liquorice Root, in fine powder, *twenty parts*	20
	Precipitated Carbonate of Calcium, *twenty parts*	20
	Alcohol, *a sufficient quantity*	q. s.

Triturate the Camphor with a little Alcohol and afterwards with the powdered Liquorice Root and Precipitated Carbonate of Calcium, until a uniform powder results. Then rub the Sulphate of Morphia with this powder, gradually added, until the whole is thoroughly mixed.

¶ Should be introduced into the U. S. Ph.

Pulvis Rhei Compositus. *Compound Powder of Rhubarb.*

Take of	Rhubarb, in very fine powder, *two parts*	2
	Magnesia, *six parts*	6
	Ginger, in very fine powder, *one part*	1

Rub them together until they are thoroughly mixed.

Pyrethrum.—* Pycnanthemum (?).

Pyroxylon. *Pyroxylon. Colloxylon. Soluble Gun Cotton.*

Take of	Cotton, freed from impurities, *one part*	1
	Nitric Acid, *seven parts*	7
	Sulphuric Acid, *eight parts*	8

Mix the acids gradually, in a porcelain or glass vessel, and when the temperature of the mixture has fallen to 32° C. (=90° F.), add the Cotton; by means of a glass rod imbue it thoroughly with the acid, and allow it to macerate for 15 hours, then transfer it to a larger vessel, and wash it, first with cold water until the washings cease to have an acid taste, and then with boiling water. Drain the cotton on filtering paper, and dry it by means of a water-bath.

If acids of the proper strength cannot be easily obtained, use for *one part* of Cotton, Nitric Acid of the spec. gr. 1.382 to 1.390, *eight parts*; and Sulphuric Acid of the spec. gr. 1.833, *twenty parts*, and proceed as directed.

¶ The *Germ. Pharm. Rep.* recommends the following:

Sulphuric Acid, spec. gr. 1.830	800 parts
Nitric Acid, spec. gr. 1.380	400 "
Cotton	45 to 50 "

Mix the acids and cool them to 20° C. (=68° F.), then introduce the cotton and imbue it thoroughly with the acid. Let stand for 48 hours, then wash the cotton thoroughly with water and dry. The yield is about 65 parts.—Compare note to *Collodium*.

Quassia.—Quercus Alba.—Quercus Tinctoria.—* Quinia (?).—* Quiniæ Hydrobromas.—Quiniæ * Hydrochloras (instead of *Murias*).**—* Quiniæ Salicylas.**

Quiniæ Sulphas.

The Test of Sulphate of Quinia.

(By Prof. Alb. B. Prescott.)

We have for consideration, (1) Kerner's test, as it is in the German Pharmacopœia, or with some modification in the manipulation, the means of separation being only water and ammonia;† (2) Paul's modification of Kerner's test, given in Attfield's Chemistry;‡ (3) Hesse's test,§ in the main a modification of Kerner's—both Paul's and Hesse's requiring the use of water, ammonia, and ether.

Kerner's test, as originally given, and given unchanged in the German Pharmacopœia, may be directed as follows: Twenty cc. of distilled water,

† See reference at p. 29, Am. Jour. Phar., xxxiv., 426. Also, New Rem. (1877), vi. 136, and (1878) vii., 108.

‡ Am. Ed. of 1879, p. 605; also, Phar. Jour. and Trans. [3], vii., 653, 672 (Feb., 1877); Pro. Am. Phar. Asso., 1877, xxv., 304. Given as a substitute for the Br. Ph. test.

§ Am. Jour. Phar., li., 135 (Mar., 1879); New Rem., viii., 139 (May, 1879), 179 (June, 1879).

at 15° C., are agitated with two grammes of quinia sulphate; the mixture is macerated half an hour at the same temperature and then filtered, and to five cc. of the filtrate, in a test-tube, seven cc. of water of ammonia [of not more than 0.96 sp. gr.], cautiously added, so as to mix the liquids as little as possible. On gently turning the test-tube, closed by the finger, there should be formed, either immediately or after a short time, a clear liquid.

Flückiger, in his late valuable work,† gives this as the cardinal test of quinia sulphate for other cinchona alkaloids. He treats one gramme quinia sulphate with ten cc. of water, at 15° C., and proceeds as above. As a closer exclusion of quinidia sulphate, the same author directs to treat another five cc. of the filtrate (obtained in the same way) with a few drops of alcoholic solution of potassium iodide, a precipitate indicating quinidia. Also, Flückiger directs another test in guarding against both quinidia and cinchonidia, as follows: One gramme of dried quinia sulphate is treated with 15 cc. of alcohol-free [water-washed] chloroform, at 15° C., and 10 cc. of the filtrate are evaporated to dryness [in a weighed dish]. The residue should not weigh over 0.035 gramme ‡ (test for quinidia and cinchonia). The residue of sulphate undissolved by the chloroform, after evaporation of chloroform, is treated with 10 cc. of water, in Kerner's test as above, for cinchonidia.

My own recommendation, for the pharmacopœia, with my present information, is for Kerner's test. Some have reported it as too strict, liable to give a false indication of foreign alkaloids, from an imperceptible variation in the strength of the ammonia water or variation in the manipulation. If this is true, the quantity of the ammonia water should be increased, perhaps to 8 cc. instead of 7.

*** Quiniæ Tannas (?).—Quiniæ Valerianas.—* Quinidia (?).**

*** Quinidiæ Sulphas.**

The Test of Sulphate of Quinidia.

(By Prof. Alb. B. Prescott.)

The precipitation by potassium iodide, testing the filtrate with ammonia as directed by Hesse,§ and independantly by De Vrij,‖ is a most satisfactory test for general use, and I presume nothing else will be thought of for the pharmacopœia. Hesse gives it in brief directions as follows: 0.5 gramme with 0.5 gramme of pure potassium iodide [not alkaline to test paper], are agitated

† Pharmaceutische Chemie, 1879, i., 419.

‡ The residue should not weigh over about 0.015, if the quinia sulphate were chemically pure, as chloroform dissolves 0.001 of its weight of the salt. The mere presence of quinidia and cinchonia sulphates, however, materially increases the chloroform solubility of quinia sulphate, as shown by the writer's report last year (Pro. Am. Phar., 1878, 834). I presume the 0.035, of Flückiger, is a practical conclusion from sufficient experiment.

§ Liebig's Annalen, vol. 176, p. 322 (1875), Archiv der Pharmacie, 1878, 495.

‖ Phar. Jour. Trans. [3], viii. 745 (Mar. 23d, 1878); Pro. Am. Phar. Asso., 1878, xxvi. 582; Am. Jour. Phar., l., 304, June, 1878; New Rem., vii., 148, May, 1878.

with 10 cc. of hot water (about 60° C.), and after an hour, with frequent agitation, filtered. The filtrate treated with a drop or two of water of ammonia, should not be made turbid [more than slightly turbid].

De Vrij dissolves one part of the salt in fifty of hot water, adds one-half part potassium iodide, and after some hours filters and adds ammonia, when only slight turbidity should ensue. The precipitate should be sandy, not resinous (which would indicate cinchonidia, or cinchonia, or both).

Ranunculus (*d*).—**Resina.**—* **Resina Copaibæ.**—* **Resina Elastica** (*India Rubber;* see *Empl. Resinæ Elasticæ.*)

Resina Jalapæ. *Resin of Jalap.*

Take of	Jalap, in fine powder, *ten parts*	10
	Alcohol ("Stronger Alc."), *a sufficient quantity*	q. s.
	Water, *a sufficient quantity*	q. s.

Moisten the Jalap with about one-fourth of its weight of Alcohol, pack it firmly in a cylindrical percolator, and gradually pour upon it Alcohol, *ten parts* 10
When the liquid begins to drop from the percolator, close the lower orifice with a cork, and having closely covered the percolator, to prevent evaporation, set it aside in a moderately warm place for 4 days. Then, having removed the cork, gradually pour Alcohol upon the surface, and continue the percolation until the percolate weighs *twenty parts* . . 20
[or until the percolate ceases to produce turbidity when dropped into water]. Distil off the alcohol, by means of a water-bath, until the tincture is reduced to *four parts* 4
and add it, with constant stirring, to Water, *ninety parts* 90
When the precipitate has subsided, decant the supernatant liquid, and wash the precipitate twice by decantation, with fresh portions of Water. Place it upon a strainer, and having pressed out the liquid, dry the Resin with a gentle heat.

N.B.—The directions, inclosed in brackets, need be followed only when the process is used for assaying jalap.

¶ The proportions are nearly the same as those of the present formula. The *Germ. Pharm. Rep.* adds the following charcteristics: 1 part of the resin is soluble in 50 parts of warm water of ammonia. On cooling, the solution does not gelatinize, and remains clear, after being supersaturated with acids. If the ammoniacal solution is at once evaporated, the residue is soluble in water. The resin is insoluble in bisulphide of carbon (*Flückiger*). Compare *Extractum Jalapæ.*

Resina Podophylli. *Resin of May-apple.*

Take of	May-apple, in fine powder, *one hundred parts*	100
	Hydrochloric acid, *one part*	1
	Alcohol ("Strong. Alc."), *a sufficient quantity*	q. s.
	Water, *a sufficient quantity*	q. s.

Moisten the May-apple with about one-fourth of its weight of Alcohol, pack it firmly in a cylindrical percolator, and gradually pour upon it Alcohol, *one hundred parts* 100
When the liquid begins to drop from the percolator, close the orifice with a cork, and having closely covered the percolator, to prevent evaporation, let it stand in a moderately warm place for 4 days. Then, having removed the cork, gradually pour Alcohol upon the surface, until the percolate amounts to *one hundred parts* 100
Distil off the Alcohol, by means of a water-bath, until the tincture is reduced to the consistence of honey, and pour it, under constant stirring, slowly into Water, *one hundred parts* 100
previously cooled to a temperature below 10° C. (=50° F.), and mixed with the Hydrochloric Acid. When the precipitate has subsided, decant the supernatant liquid, and wash the precipitate twice, by decantation, with fresh portions of cold Water. Then place it upon a strainer, press out the liquid, and dry the resin by exposure to the atmosphere in a cool place.

¶ This formula has been reconstructed according to the recommendations of Mr. J. U. Lloyd. See *Proceed. Amer. Pharm. Assoc.*, vol. 26, 767. *New Remedies*, 1879, 262.

Resina Scammonii. *Resin of Scammony.*

Take of Scammony, in fine powder, *ten parts* 10
Alcohol ("Strong. Alc."), *a sufficient quantity* . . . . . q. s.
Water, *a sufficient quantity* . . . . . q. s.

Digest the Scammony with successive portions of boiling Alcohol, until exhausted. Mix the tinctures, and reduce the liquid to a syrupy consistence by distilling off the alcohol. Then add the residue to Water, *twenty-five parts* 25
separate the precipitate formed, wash it thoroughly with Water, and dry it with a gentle heat.

Rheum.—Rhus Glabra (not *glabrum*).—**Rosa Centifolia.—Rosa Gallica.—Rosmarinus.—Rottlera** (*d*; see *Kamala*).—**Rubia** (*d*).—**Rubus.—*Rubus Idæus.—Rumex.—Ruta** (*d*).—**Sabadilla.—Sabbatia** (*d*).—**Sabina.—Saccharum.—Saccharum Lactis.—Sago** (*d*; see *Avenæ Farina*).—***Salicinum.—Salix** (*d*?). — **Salvia.** — **Sambucus.—Sanguinaria.** — **Santalum.** — **Santonica.—Santoninum.—Sapo.**

¶ Should be specified to be free from mineral matters. Only the white variety (of Castile Soap) should be used.

***Sapo Viridis.—Sarsaparilla.—Sassafras.—Sassafras Medulla** (*d*).

***Saturationes.** *Saturations.*

¶ This is a class of preparations suggested by Prof. C. Lewis Diehl, as eventual substitutes for Fluid Extracts, if it should be decided that the latter class of prepara-

tions are too concentrated, either to hold all the useful constituents of the drug in solution, or to be prepared without risking loss of some of the constituents. These saturations might be of half the strength of the present Fluid Extracts. See *Proceed. Amer. Pharm. Assoc.*, vol. 27.

Scammonium.—Scilla.—Scoparius.—Scutellaria (*d*).—**Senega.—Senna.**

*** Sericum.** (*Silk*) *Taffeta.*

¶ For preparing the following, if it is considered proper to introduce such preparations into the U. S. Ph.

*** Sericum Gelatinæ.** *Gelatin Plaster. Court Plaster.*

Take of	Gelatin, *one part*	1
	Tincture of Benzoin, *a sufficient quantity*	q. s.
	Water, *twelve parts*	12
	Taffeta, *a sufficient quantity*	q. s.

Dissolve the Gelatin in the water. Spread a piece of Taffeta on a level surface, and coat it with a layer of Tincture of Benzoin. When this is dry, reverse the Taffeta, and apply to the other side the Gelatin solution in five or six successive layers, waiting after each application until the layer is dry.

*** Sericum Ichthyocollæ.** *Isinglass Plaster.*

Take of	Isinglass, *ten parts*	10
	Alcohol, *forty parts*	40
	Glycerin, *one part*	1
	Water, *a sufficient quantity*	q. s.
	Tincture of Benzoin, *a sufficient quantity*	q. s.
	Taffeta, *a sufficient quantity*	q. s.

Dissolve the Isinglass in sufficient hot Water to make the solution weigh *one hundred and twenty parts* 120
Spread one-half of this upon the Taffeta, stretched on a level surface, in successive layers, waiting after each application until the layer is dry. Mix the second half of the Isinglass solution with the Alcohol and Glycerin, and apply it in the same manner. Then reverse the Taffeta, and coat it on the back with a layer of Tincture of Benzoin. Finally dry it.

Substituting *gramme* (or 15.5 *grains*) for *part*, the above quantities are sufficient to cover a piece of Taffeta 42 centimetres (16½ inch.) long, and 35 centimetres (13¾ inch.) wide.

Serpentaria.—Sesamum.—Sevum.—Simaruba (*d*).—**Sinapis Alba.—Sinapis Nigra.—Soda.—Sodii Acetas.—Sodii Arsenias.**

*** Sodii Benzoas.** *Benzoate of Sodium.*

Take of	Carbonate of Sodium, in crystals, *twelve parts*	12
	Benzoic Acid, *a sufficient quantity*	q. s.
	Water, *thirty-six parts*	36

Dissolve the Carbonate of Sodium in the Water, heat the solution to the boiling point, and having reserved a small quantity of the solution, saturate the remainder as nearly as possible with *a sufficient quantity* of Benzoic Acid, about *ten parts* 10

Should the solution be acid, add a sufficient amount of the reserved alkaline solution. Then filter, and evaporate the filtrate in a porcelain capsule, on the water-bath, to dryness.

¶ The *Germ. Pharm. Rep.* adds: A white powder consisting of effloresced crystals, having a faint odor of benzoin, but none recalling that of urine or of oil of bitter almonds.

Sodii Bicarbonas.—Sodii Bicarbonas Venalis.—Sodii Boras.—* Sodii Bromidum.

¶ The *Germ. Pharm. Rep.* adds: A white crystalline powder, soluble in 1¼ parts of cold water, also in alcohol. It is unalterable in the air; and imparts an intense yellow color to an alcohol-flame. A solution of 1 gramme in 20 gm. of water must not be altered, inside of 2 minutes, by 5 drops of a (volumetric) solution of barium nitrate. Neither sulphuretted hydrogen nor sulphide of ammonium should produce a precipitate in its aqueous solution; nor should the latter be colored yellow by diluted sulphuric acid. On mixing the aqueous solution with recently boiled solution of starch, and afterwards adding chlorine water, no blue zone is developed.

Sodii Carbonas.—Sodii Carbonas Exsiccata.—* Sodii Chloras.—Sodii Chloridum.—Sodii Hypophosphis.—Sodii Hyposulphis.—* Sodii Iodidum.—Sodii Nitras.—Sodii Phosphas.—* Sodii Salicylas.

¶ Small white crystalline scales, soluble in equal parts of cold water, less soluble in alcohol, very little in ether. An aqueous solution of 1 in 10 should have a faintly acid reaction, and should yield a red-brown color with solution of chloride of iron. In its aqueous solution, addition of hydrochloric acid produces a copious precipitate, which may be completely dissolved by shaking with ether. Solution of barium nitrate does not disturb the aqueous solution. A sample of the solution, mixed with enough alcohol to prevent the production of a precipitate by the addition of nitric acid, is not rendered turbid by nitrate of silver (*Schering*).—*Germ. Pharm. Rep.*

Sodii Sulphas.—Sodii Sulphis.—* Sodii Sulphocarbolas. — Solidago (*d*). **— Spigelia.—Spiræa.**

Spiritus Ætheris Compositus. *Compound Spirit of Ether.*

Take of	Ether, *thirty parts*	30
	Alcohol ("Stronger Alcohol"), *sixty-seven parts* . .	67
	Ethereal Oil, *three parts*	3

Mix them.

¶ The proportions of the U. S. Ph., by weight, are: Ether, 27; Alcohol, 61; Eth. Oil, 3 parts; or, Ether, 30; Alcohol, 66.6; Eth. Oil, 3.3 per cent.

Spiritus Ætheris Nitrosi. *Spirit of Nitrous Ether.*

Take of	Nitric Acid, *twenty parts*	20
	Sulphuric Acid, *sixteen parts*	16

Copper, in form of wire or clippings, *ten parts* . . . 10
Saturated Solution of Chloride of Calcium,
a sufficient quantity . . . . . q. s.
Alcohol ("Stronger Alcohol"), *a sufficient quantity* . q. s.

Add the Sulphuric Acid gradually to Alcohol, *seventy parts* . . 70
When the mixture has become cool, pour it into a glass or stone-ware retort, connected with a Liebig's condenser, add the Copper, and of the Nitric Acid, *eighteen parts* 18
Then cautiously apply heat, and distil *forty-eight parts* 48
at a temperature not exceeding 82.2° C. (=180° F.). Remove the heat, let the contents of the retort cool to 32.2° C. (=90° F.), add the remainder of the Nitric Acid (*two parts*), and distil, in the same manner as before, *seven parts* 7
Add the distillate to its own bulk of a Saturated Solution of Chloride of Calcium, and agitate cautiously. Separate, by means of a separating funnel, the lower solution, and to every *five parts* 5
of the remaining ethereal liquid immediately add
Alcohol, *ninety-five parts* 95

¶ This formula has been reconstructed mainly on the basis of the process recommended by Mr. J. U. Lloyd.

The spec. grav. of this preparation, which contains 5% of nitrous ether, is 0.835. Mr. L. Dohme has calculated the formula of the present U. S. Ph. into parts by weight, as follows:

Spts. Ætheris Nitrosi.	Orig. Formula	Exact weight.	Approximation.	
Nitric Acid	4½ troy ʒ	2,160 grs.	21.6	20
Stronger Alcohol	112 fl. ʒ	41,697 "	417	400
Sulphuric Acid	3½ troy ʒ	1,680 "	17	16
Copper	2 troy ʒ	960 "	10	10
Different Steps of the Process.				
Alcohol	20 fl. ʒ	7,445 "	74	70
Nitric Acid, 1st addition	4 troy ʒ	1,920 "	19	18
Nitric Acid, 2d edition	½ troy ʒ		2.6	2
Distillate, No. 1	13 fl. ʒ	4,858 "	48	48
Distillate, No. 2	2 fl. ʒ	747 "	7	7

Spiritus Ammoniæ. *Spirit of Ammonia.*

Take of Alcohol, *forty-five parts* 45
Stronger Water of Ammonia, *one hundred parts* . . 100

Pour the Stronger Water of Ammonia into a flask, provided with a safety-funnel, and connected with a well-cooled receiver, into which the Alcohol is introduced. Heat the flask carefully and gradually, between 40 and 60° C. (=104° and 140° F.), until the specific gravity of the Alcohol has been reduced to 0.808–0.810. The product contains about 10° of ammoniacal gas (NH_3).

When diluted with water, it behaves towards reagents the same as Water of Ammonia.

It should be preserved in glass-stoppered bottles.

¶ This is an improvement of the present process. The Alcohol in Spiritus Ammoniæ has heretofore been that of spec. gr. 0.830. If this is to be retained, and the term "Alcohol" hereafter made to denote the present "Stronger Alcohol," the above formula will need slight modification, in order to reduce the alcohol.

Spiritus Ammoniæ Aromaticus. *Aromatic Spirit of Ammonia.*

Take of
- Carbonate of Ammonium, *forty parts* 40
- Water of Ammonia, *one hundred parts* 100
- Oil of Lemon, *nine parts* 9
- Oil of Nutmeg, *three parts* 3
- Oil of Lavender, *one part* 1
- Oil of Pimento, *one part* 1
- Alcohol ("Stronger Alc."), *seven hundred parts* . . . 700
- Water, *a sufficient quantity* . . . . . q. s.

Dissolve the Carbonate of Ammonium in the Water of Ammonia, previously mixed with Water, *one hundred and thirty parts* . . 130
Dissolve the Oils in the Alcohol, mix the two solutions, and add sufficient Water to make the product weigh *one thousand parts* 1000
Filter, if necessary, through paper, in a well-covered funnel.

¶ In practice, it will be found a rare occurrence to obtain a perfectly limpid solution. With proper care, filtration may be performed without loss. The addition of Oil of Pimento is a decided improvement, as it helps to cover the sharp flavor of the Oil of Nutmeg. The spec. grav. of the above spirit is 0.885. Substituting grammes for parts, the product will measure ab. 1130 cc., or 38¼ fl. ℥.

Present Formula.			Approximations.	
Carb. Amm.	1 ℥	460 grs.	37	40
Water Amm.	3 fl. ℥	1,512 "	100	100
Oil Lemon	2¼ fl. ʒ	121 "	9	9
" Nutmeg	40 ♏	35 "	3	3
" Lavender	15 ♏	18 "	1	1
Alcohol	24 fl. ℥	9,132 "	780	700
Water, q. s. to make	4.227 fl. ℥	1,926 "	150	146
			1,000	1,000

Including Oil of Pimento, 1 part.

Spiritus Anisi. *Spirit of Anise.*

Take of
- Oil of Anise, *ten parts* 10
- Alcohol ("Stronger Alcohol"), *ninety parts* . . . 90

Dissolve the Oil in the Alcohol.

¶ The strength has been raised to 10% (see Note to *Spir. Menth. Pip.*).

Present Formula.			Approximation.	
Oil Anise	1 fl. ℥	456 grs.	4	6.8
Strong. Alcohol	15 fl. ℥	5,564 "	55	93.2
				100.0

Spiritus Camphoræ. *Spirit of Camphor.*

Take of Camphor, *one part* 1
Alcohol ("Stronger Alc."), *six parts* 6

Dissolve the Camphor in the Alcohol.

¶ This is the nearest proportion in which the present strength of this preparation can be expressed in parts by weight. The formula of the present U. S. Ph. is:

	Original Form.	Exact Weight.	Approximation.		Per Cent.
Camphor . .	4 troy ʒ	1,920 grs.	13.62	7	14
Alcohol . .	32 fl. ʒ	12,176 "	86.37	43	86
			99.99		100

It would be preferable to adopt a strength of 10%, which is sufficiently strong for all medicinal purposes, and which may be prepared after the pattern of the formula contained in the Germ. Pharm., namely:

Take of Camphor, *one part* 1
Alcohol ("Stronger Alcohol"), *seven parts* 7
Distilled Water, *two parts* 2

Dissolve the Camphor in the Alcohol, then add the Water.

*** Spiritus Cari.** *Spirit of Caraway.*

Take of Oil of Caraway, *two parts* 2
Alcohol ("Stronger Alc."), *ninety-eight parts* 98

Dissolve the Oil in the Alcohol.

¶ This preparation is added for the reason that it will be awkward to construct a formula for *Spiritus Juniperi Co.* in parts by weight, and directing essential oils, as the latter are present in so small a quantity. It was thought better, therefore to introduce a *Spiritus Cari*, and *Spiritus Fœniculi*: preparations, which are also much used in practice by themselves.

Spiritus Chloroformi. *Spirit of Chloroform.*

Take of Purified Chloroform, *one part* 1
Alcohol (Stronger Alc.), *nine parts* 9

Dissolve the Chloroform in the Alcohol.

Present Formula.			Approximation.	
Chloroform . .	1 troy ʒ	480 grs.	5	10
Alcohol . .	12 fl. ʒ	4,566 "	45	90
				100

Spiritus Cinnamomi. *Spirit of Cinnamon.*

Take of Oil of [Ceylon] Cinnamon, *ten parts* 10
Alcohol ("Stronger Alcohol"), *ninety parts* 90

Dissolve the Oil in the Alcohol.

¶ The strength has been raised from 8 to 10%. See note to *Spir. Menth. Pip.* The present strength is:

Oil Cinnamon . .	1 fl. ʒ	471.54 grs.	7,786	8	8
Stronger Alcohol .	15 fl. ʒ	5,584.47 "	92,210	92	92
			99,996		100

*** Spiritus Fœniculi.** *Spirit of Fennel.*

Take of Oil of Fennel, *two parts* 2
Alcohol ("Stronger Alcohol"), *ninety-eight parts* . . 98

Dissolve the Oil in the Alcohol.

¶ This preparation is added for the same reason as in the case of *Spiritus Cari*; see the note to the latter.

Spiritus Frumenti.

*** Spiritus Jasmini.** *Spirit of Jasmine.*

¶ If a formula for making this should be made officinal (for Cologne), deodorized alcohol would have to be introduced likewise.

Spiritus Juniperi. *Spirit of Juniper.*

Take of Oil of Juniper, *two parts* 2
Alcohol ("Stronger Alc."), *ninety-eight parts* . . . 98

Dissolve the Oil in the Alcohol.

¶ Same strength as at present.

Spiritus Juniperi Compositus. *Compound Spirit of Juniper.*

Take of Spirit of Juniper, *eight parts* 8
Spirit of Caraway, *one part* 1
Spirit of Fennel, *one part* 1
Alcohol (Stronger Alc.), *fifty parts* 50
Water, *forty parts* 40

¶ It being inconvenient to construct a formula in parts by weight containing the essential oils, the spirits were substituted for the latter. The exact proportions of the formula would in this case be:

Spirit of Juniper	7.25 parts.
Spirit of Caraway	0.80 "
Spirit of Fennel	0.85 "
Alcohol	52.917 "
Water	38.183 "

The nearest round numbers approaching these values are given above.

Spiritus Lavandulæ. *Spirit of Lavender.*

Take of Oil of Lavender, *two parts* 2
Alcohol ("Stronger Alc."), *ninety-eight parts* . . . 98

Dissolve the Oil in the Alcohol.

¶ Same strength as at present.

Spiritus Lavandulæ Compositus. *Compound Spirit of Lavender.*

Take of Oil of Lavender, *four parts* 4
Oil of Rosemary, *one part* 1

Cinnamon, in moderately fine powder, *nine parts* . . 9
Cloves, in moderately fine powder, *two parts* . . . 2
Nutmeg, in moderately fine powder, *five parts* . . . 5
Red Saunders, in moderately fine powder, *four parts* . 4
Alcohol ("Stronger Alc."), *three hundred and forty parts* 340
Water, *one hundred and thirty-five parts* 135
Diluted Alcohol, *a sufficient quantity* . . . . . q. s.

Dissolve the Oils in the Alcohol and add the Water. Then mix the powders, and having moistened the mixture with a sufficient quantity of the alcoholic solution of the Oils, pack it firmly in a conical percolator, and gradually pour upon it the remainder of the alcoholic solution, and afterwards Diluted Alcohol until the percolate amounts to *five hundred parts* . . 500

¶ The spec. grav. of the spirit of the present U. S. Ph. is about 0.874. That of the above preparation is about 0.848.

Present Formula.			Approximation.	
Oil Lavender . .	1 fl. oz.	405	0.755	8
Oil Rosemary . .	2 " dr.	102	0.190	2
Cinnamon . . .	2 troy oz.	960	1.789	18
Cloves . . .	½ "	240	0.447	4
Nutmeg . . .	1 "	480	0.894	9
Red Saunders . .	360 grs.	360	0.670	7
Alcohol . . .	96 fl. oz.	36,528	68.079	680
Water . . .	32 fl. oz.	14,579	27.172	272
			99.996	1000

Spiritus Limonis. *Spirit of Lemon.*

Take of Oil of Lemon, *six parts* 6
Lemon Peel, freshly grated, *four parts* 4
Alcohol ("Stronger Alcohol"), *a sufficient quantity* . . q. s.

Dissolve the Oil in Alcohol, *ninety-four parts* 94
add the Lemon Peel, macerate for twenty-four hours, filter through paper, and pass enough Alcohol through the filter to make the filtrate weigh *one hundred parts* 100

Present Formula.			Approximation per cent.	
Oil Lemon . .	2 fl. ʒ	776.22 gr.	8	6.015
Lemon Peel . .	1 troy ounce	480.00 "	5	3.759
Stronger Alcohol .	32 fl. ʒ	11,913.54 "	120	90.225
				99.999

Spiritus Menthæ Piperitæ. *Spirit of Peppermint.*

Take of Oil of Peppermint, *ten parts* 10
Peppermint, in coarse powder, *one part* 1
Alcohol ("Stronger Alc."), *a sufficient quantity* . . . q. s.

Dissolve the Oil in Alcohol, *ninety parts* 90
add the Peppermint, and macerate for 24 hours. Then filter through

paper, and pass enough Alcohol through the Peppermint on the filter to make the filtrate weigh *one hundred parts* 100

¶ The proportion of Oil of Peppermint has been increased from 6.4% to 10%; the latter strength is that long in use in Germany, etc. The same alteration has been made in the formulæ of *Spiritus Menthæ Viridis*, *Spir. Anisi*, *and Spir. Cinnamomi.*

Spiritus Menthæ Viridis. *Spirit of Spearmint.*

Take of Oil of Spearmint, *ten parts* 10
Spearmint, in coarse powder, *one part* 1
Alcohol ("Stronger Alc."), *a sufficient quantity* . . . q. s.

Dissolve the Oil in Alcohol, *ninety parts* 90
add the Spearmint, and macerate for 24 hours. Then filter through paper, and pass enough Alcohol through the Spearmint on the filter to make the filtrate weigh *one hundred parts* 100

¶ The strengh has been raised to 10%. See note to *Spiritus Menth. Pip.*

Spiritus Myrciæ.

Spiritus Myristicæ. *Spirit of Nutmeg.*

Take of Oil of Nutmeg, *two parts* 2
Alcohol ("Stronger Alc."), *ninety-eight parts* . . . 98

Dissolve the Oil in the Alcohol.

¶ Same strength as at present.

*** Spiritus Odoratus.** *Cologne.*

¶ During the discussion of the subject of Cologne, at the meeting of the Amer. Pharm. Association, held at Toronto in 1877 (see *Proceedings*, vol. 25, p. 546), it was generally conceded that a formula for Cologne should be made officinal. At the same time it was pointed out that in order to render it more grateful and refreshing for the sick, one of its ingredients should be acetic ether. For the present it is left undecided what particular formula for Cologne should be adopted. If a working formula is given, the single constituents will have to be introduced, if not already officinal, in their appropriate places in the U. S. Ph. Compare *Adeps Jasmini*, *Alcohol Deodoratum*, *Oleum Aurantii Florum*, *Jasminum*, *Spiritus Jasmini.*

Statice (*d*).—Stillingia.—Stramonii Folia.—Stramonii Semen.—Strychnia.—* Strychniæ Acetas.—Strychniæ Sulphas.—Styrax.

Succi. *Juices.*

¶ The expressed juice of fresh plants is to be mixed with alcohol, allowed to stand for seven days, and then to be filtered.

The proportions to be used are the following:

Fresh Juice, *four parts* 4
Alcohol, *one part* 1

Taking into consideration the specific gravity of the alcohol and the average spec. grav. of the expressed juices, the above represents very nearly a proportion by *measure* of *three parts* of juice and *one part* of alcohol. The only two juices which are

at present officinal are those of Conium and of Taraxacum. These are directed by our Pharm. to be prepared from five volumes of juice and one volume of alcohol. Now, so far as known, these preparations are not made in the U. S., but are imported from England, where they are made according to the Brit. Pharm., from three volumes of juice and one volume of alcohol. It seems, therefore, to be preferable to adopt this strength also in the U. S. Ph.

*** Succus Belladonnæ.** *Juice of Belladonna.*

Take of Fresh Belladonna Leaves and Young Branches, *a convenient quantity* . . . . . q. s.
Alcohol, *a sufficient quantity* . . . . . q. s.

Bruise the Belladonna in a stone-mortar and press out the juice. Mix of this juice *four parts* 4
with Alcohol, *one part* 1
set it aside for seven days, filter, and keep the product in a cool place.

Succus Conii.—* Succus Hyoscyami.—Succus Taraxaci.

¶ These three are to be prepared by the same process as the preceding.

Sulphur Lotum.

Sulphur Præcipitatum. *Precipitated Sulphur.*

Take of Sublimed Sulphur, *one hundred parts* 100
Lime, *one hundred and fifty parts* 150
Hydrochloric Acid, *a sufficient quantity* . . . . . q. s.
Water, *a sufficient quantity* . . . . . q. s.

Pour sufficient Water on the Lime to slake it, and having mixed the Sulphur with it, add to the mixture Water, *nineteen hundred parts* . 1900
then boil for two hours, occasionally adding Water to replace that lost by evaporation, and filter. Dilute the filtered liquid with an *equal volume* of Water, and drop into it Hydrochloric Acid, *a sufficient quantity* . q. s.
as long as a precipitate is produced. Lastly, wash the Precipitated Sulphur repeatedly with Water until the washings are nearly tasteless, and dry it.

Sulphur Sublimatum.—Sulphuris Iodidum.

¶ The latter to be prepared by the same process as at present.

*** Sumbul.**

Suppositoria. *Suppositories.*

¶ The general formula given in the present U. S. Ph. is quite satisfactory and should be retained. Working quantities have been added as in the case of pills (see *Pilulæ*).

Suppositoria Acidi Carbolici. *Suppositories of Carbolic Acid.*

Take of Carbolic Acid, *twelve parts* 12
Oil of Theobroma, *three hundred and forty-eight parts* . 348
Water, *a sufficient quantity* . . . . . q. s.

Mix the Carbolic Acid, previously dissolved in a few drops of Water, thoroughly with Oil of Theobroma, *sixty parts* . . . . . 60 and then, having melted the remainder of the Oil of Theobroma, proceed according to the directions given in the general formula, and divide the mass into such a number of suppositories, that each will contain 6 centigrammes (0.06 gm) or 1 grain of Carbolic Acid.

Substituting *decigramme* for *part*, the mass will make 20 suppositories.

Substituting *grain* for *part*, the mass will make 12 suppositories.

¶ It is recommended to repeat all the directions in each formula. To save space this is not done here.

Suppositoria Acidi Tannici. *Suppositories of Tannic Acid.*

Take of Tannic Acid, *sixty parts* 60
Oil of Theobroma, *three hundred parts* 300

Mix the Tannic Acid thoroughly with Oil of Theobroma, *sixty parts* 60 and then, having melted the remainder of the Oil of Theobroma, proceed according to the directions given in the general formula, and divide the mass into such a number of suppositories, that each will contain 30 centigrammes (0.30 gm.) or 5 grains of Tannic Acid.

Substituting *decigramme* for *part*, the mass will make 20 suppositories.

Substituting *grain* for *part*, the mass will make 12 suppositories.

Suppositoria Aloes. *Suppositories of Aloes.*

Take of Purified Aloes, in very fine powder, *sixty parts* . . . 60
Oil of Theobroma, *three hundred parts* 300

Mix the Aloes thoroughly with Oil of Theobroma, *sixty parts* . . 60 and then, having, etc., etc. (as before), . . . and divide the mass into such a number of suppositories, that each will contain 30 centigrammes (0.30 gm.) or 5 grains of Purified Aloes.

Substituting *decigramme* for *part*, the mass will make 20 suppositories.

Substituting *grain* for *part*, the mass will make 12 suppositories.

Suppositoria Asafœtidæ. *Suppositories of Asafœtida.*

Take of Tincture of Asafœtida, *four hundred parts* 400
Oil of Theobroma, *three hundred and twenty parts* . 320

Expose the Tincture to the air, in a porcelain capsule, in a moderately warm place, and allow it to evaporate spontaneously until reduced to the consistence of a thick syrup. Mix this thoroughly with
Oil of Theobroma, *sixty parts* 60

and then, having, etc., etc. (as before), . . . and divide the mass into such a number of suppositories, that each will represent 2 grammes (2 gm.) or 32 grains of Tincture of Asafœtida.

Substituting *decigramme* for *part*, the mass will make 20 suppositories.
Substituting *grain* for *part*, the mass will make 12 suppositories.

¶ 1 fl. oz. of Tinct. of Asafœtida weighs ab. 413 grains.

Suppositoria Belladonnæ. *Suppositories of Belladonna.*

Take of	Alcoholic Extract of Belladonna, *six parts*	6
	Oil of Theobroma, *three hundred and fifty-four parts* .	354
	Water, *a sufficient quantity*	q. s.

Having rubbed the Extract of Belladonna into a smooth paste, with the addition of a very small quantity of Water, mix it thoroughly with Oil of Theobroma, *sixty parts* 60
and then, having, etc., etc. (as before), . . . and divide the mass into such a number of suppositories, that each will contain 3 centigrammes (0.03 gm.) or ½ grain of Alcoholic Extract of Belladonna.

Substituting *decigramme* for *part*, the mass will make 20 suppositories.
Substituting *grain* for *part*, the mass will make 12 suppositories.

*** Suppositoria Iodoformi.** *Suppositories of Iodoform.*

Take of	Iodoform, *sixty parts*	60
	Oil of Theobroma, *three hundred parts*	300

Mix the Iodoform thoroughly with Oil of Theobroma, *sixty parts* . 60
and then, having, etc., etc. (as before), . . . and divide the mass into such a number of suppositories, that each will contain 30 centigrammes (0.30 gm.) or 5 grains of Iodoform.

Substituting *decigramme* for *part*, the mass will make 20 suppositories.
Substituting *grain* for *part*, the mass will make 12 suppositories.

Suppositoria Morphiæ. *Suppositories of Morphia.*

Take of	Sulphate of Morphia, *six parts*	6
	Oil of Theobroma, *three hundred and fifty-four parts* .	354

Mix the Sulphate of Morphia thoroughly with
Oil of Theobroma, *sixty parts* 60
and then, having, etc., etc. (as before), . . . and divide the mass into such a number of suppositories, that each will contain 3 centigrammes (0.03 gm.) or ½ grain of Sulphate of Morphia.

Substituting *decigramme* for *part*, the mass will make 20 suppositories.
Substituting *grain* for *part*, the mass will make 12 suppositories.

Suppositoria Opii. *Suppositories of Opium.*

Take of Extract of Opium, *twelve parts* 12
Oil of Theobroma, *three hundred and forty-eight parts* . 348
Water, *a sufficient quantity* . . . . . q. s.

Having rubbed the Extract of Opium into a smooth paste, with the addition of very little Water, mix it thoroughly with
Oil of Theobroma, *sixty parts* 60
and then, having, etc., etc. (as before), and divide the mass into such a number of suppositories, that each will contain 6 centigrammes (0.06 gm.) or 1 grain of Extract of Opium.

Substituting *decigramme* for *part*, the mass will make 20 suppositories.
Substituting *grain* for *part*, the mass will make 12 suppositories.

Suppositoria Plumbi. *Suppositories of Lead.*

Take of Acetate of Lead, in very fine powder, *thirty-six parts* . 36
Oil of Theobroma, *three hundred and twenty-four parts* 324

Mix the Acetate of Lead thoroughly with
Oil of Theobroma, *sixty parts* 60
and then, having, etc., etc. (as before), and divide the mass into such a number of suppositories, that each will contain 20 centigrammes (0.20) or 3 grains of Acetate of Lead.

Substituting *decigramme* for *part*, the mass will make 20 suppositories.
Substituting *grain* for *part*, the mass will make 12 suppositories.

Suppositoria Plumbi et Opii. *Suppositories of Lead and Opium.*

Take of Acetate of Lead, in very fine powder, *thirty-six parts* . 36
Extract of Opium, *six parts* 6
Oil of Theobroma, *three hundred and eighteen parts* . . 318
Water, *a sufficient quantity* . . . . . q. s.

Having rubbed the Acetate of Lead and Extract of Opium into a smooth paste, with the addition of a little Water, mix it thoroughly with
Oil of Theobroma, *sixty parts* 60
and then, having, etc., etc. (as before), and divide the mass into such a number of suppositories, that each will contain 20 centigrammes (0.20 gm.) or 3 grains of Acetate of Lead and the other ingredients in proportion.

Substituting *decigramme* for *part*, the mass will make 20 suppositories.
Substituting *grain* for *part*, the mass will make 12 suppositories.

Syrupi. *Syrups.*

¶ The Sub-Committee on Syrups recommends the cold process of preparing syrups. In some exceptional cases, a slight departure from this rule will be found advantageous, and in such cases it has been indicated in the proposed formula. The

Committee did not feel justified in recommending the process by cold percolation, because, unless carefully conducted, it will frequently fail in less practised hands. A sample formula has, however, been introduced; see *Syrupus Simplex* (*a*).

Syrupus (see *Syrupus Simplex*).

Syrupus Acaciæ. *Syrup of Acacia.*

Take of	Gum Arabic, in pieces, *one part*	1
	Sugar, in coarse powder, *seven parts*	7
	Water, *four parts*	4

Dissolve the Gum Arabic in the Water, without heat. Then, having added the Sugar, dissolve it by agitation, without heat, and strain.

¶ In practice, it will be found that this process consumes much time. The application of a *gentle* heat for dissolving the Sugar can hardly be objected to.

	Present Formula.		Approximation.	
Gum Arabic	2 ʒ	960 grs.	1	1
Sugar	14 ʒ	6,720 "	7	7
Water	8 fl. ʒ	3,646 "	3.8	4

Syrupus Acidi Citrici. *Syrup of Citric Acid.*

Take of	Citric Acid, in powder, *two parts*	2
	Water, *two parts*	2
	Spirit of Lemon, *one part*	1
	Simple Syrup, *two hundred and fifty-six parts*	256

Dissolve the Citric Acid in the Water and add the Spirit. Then add the solution gradually to the Syrup, contained in a bottle, shaking after each addition, until the whole is thoroughly mixed.

¶ Instead of Oil of Lemon (as in the present U. S. Ph.), the small quantity of which would make the proportions of the other ingredients too unwieldy, the Spirit is used in the above formula. The resulting product is fully equal, if not superior, to the former preparation.

Syrupus Allii. *Syrup of Garlic.*

Take of	Fresh Garlic, sliced and bruised, *six parts*	6
	Sugar, in coarse powder, *twenty-four parts*	24
	Diluted Acetic Acid, *a sufficient quantity*	q. s.

Macerate the Garlic with Diluted Acetic Acid, *ten parts* 10 in a glass vessel for 4 days, and express the liquid.

Mix the residue with a further quantity of the Diluted Acetic Acid, and again express until sufficient additional liquid has been obtained to make the whole, when mixed and filtered, weigh *sixteen parts* 16 Lastly, add the Sugar to the filtrate, and dissolve by agitation, without heat.

¶ Strength about the same as at present.

Syrupus Amygdalæ. *Syrup of Almond.*

Take of	Sweet Almond, *four parts*	4
	Bitter Almond, *one part*	1
	Orange Flower Water, *one part*	1
	Sugar, in coarse powder, *eighteen parts*	18
	Distilled Water, *a sufficient quantity*	q. s.

Having blanched the Almonds, rub them in a mortar to a very fine paste, adding during the trituration Distilled Water, *one part* . . . 1
and Sugar, *three parts* 3
Mix Distilled Water, *eleven parts* 11
with Orange Flower Water, *one part* 1
and add this mixture gradually, under constant trituration, to the paste; then strain, and add sufficient Distilled Water to the dregs to obtain, after strong expression, *twelve parts* 12
of strained liquid.

Add to the latter the remainder of the Sugar, and dissolve by agitation, without heat. Lastly, strain the Syrup through muslin, and keep it in a cool place, in tightly corked bottles.

¶ The proportion of Sweet to Bitter Almond, which, in the present U. S. Ph. is 3 to 1, had better be made 4 to 1, as in the Germ. Pharm. The addition of Orange Flower Water is a decided improvement, and has been practised for a long time in Europe. The preparation, if made by the above formula, is much superior to the old.

Syrupus Aurantii Corticis (*a*). *Syrup of Orange Peel.*

Take of	Sweet Orange Peel, recently dried and in moderately fine powder, *five parts*	5
	Precipitated Phosphate of Calcium, *one part*	1
	Sugar, in coarse powder, *sixty-five parts*	65
	Alcohol, *a sufficient quantity*	q. s.
	Water, *a sufficient quantity*	q. s.

Moisten the Orange Peel with one-fourth of its weight of Alcohol, introduce it into a conical percolator, and pour Alcohol upon it until the percolate amounts to *fifteen parts* 15
Evaporate this at a temperature not exceeding 49° C. (=120° F.) to *five parts* 5
add the Prec. Phosphate of Calcium, and Sugar, *three parts* . . . 3
and rub them together, gradually adding Water, *twenty parts* . . . 20
during the trituration. Then filter the liquid, and having passed sufficient Water through the filter to make the whole filtrate weigh *thirty-eight parts* 38
dissolve in it the remainder of the Sugar by agitation, without heat, and strain.

¶ The strength of this Syrup is as nearly as possible the same as at present. The next formula is furnished by Mr. Sheppard.

Syrupus Aurantii Corticis (*b*). *Syrup of Orange Peel.*

Take of	The fresh outer Peel of the Sweet Orange, cut fine, *one part*	1
	Stronger Alcohol, *one part*	1
	Precipitated Phosphate of Calcium, *a sufficient quantity*	q. s.
	Water, *a sufficient quantity*	q. s.
	Sugar, in coarse powder, *thirty parts*	30

Macerate the Orange Peel with the Alcohol for seven days. Express and filter. Rub the filtrate with one-fourth of its weight of Precipitated Phosphate of Calcium, gradually adding Water, and filter until the filtrate weighs *sixteen parts* 16
Lastly add the Sugar, dissolve by agitation, without heat, and strain.

Syrupus Aurantii Florum. *Syrup of Orange Flowers.*

Take of	Orange Flower Water, *ten parts*	10
	Sugar, in coarse powder, *eighteen parts*	18

Dissolve the Sugar in the Orange Flower Water by agitation without heat, and strain.

¶ The proportions of the present U. S. Ph. are, by weight, 19 parts of Orange Fl. Water and 36 parts of Sugar. The above proportions are more simple, and are identical with those of the Germ. Ph., and nearly so with those of the French Ph.

* **Syrupus Calcii Lactophosphatis.** *Syrup of Lactophosphate of Calcium.*

Take of	Lactic Acid, *six parts*	6
	Precipitated Phosphate of Calcium, *five parts*	5
	Orange Flower Water, *six parts*	6
	Sugar, in coarse powder, *forty-five parts*	45
	Hydrochloric Acid, *a sufficient quantity*	q. s.
	Water of Ammonia, *a sufficient quantity*	q. s.
	Water, *a sufficient quantity*	q. s.

To the Precipitated Phosphate of Calcium, contained in a suitable vessel, add Water, *twenty parts* 20
and afterwards *a sufficient quantity* of Hydrochloric Acid to dissolve the salt. Filter the solution, and add to the filtrate, gradually, and under constant stirring, *sufficient* Water of Ammonia, until the latter is present in slight excess. Allow the precipitate to subside, pour off the supernatant liquid, and add to the precipitate about twice its bulk of hot Water. Pour the whole on a muslin strainer, and when the liquid has run off, wash the residue first with hot, then with cold Water, until the washings are no longer precipitated, or at most only made opalescent, by an acid solution of nitrate of silver.

When the precipitate has drained, mix it with the Lactic Acid and Orange Flower Water, and stir well. After the lapse of two hours filter, and add enough Water through the filter to make the filtrate weigh *thirty-five parts* 35
Lastly add the Sugar, dissolve it by agitation without heat, and strain.

***Syrupus Calcis.** *Syrup of Lime.*

Take of	Clean, well-burnt Lime, *one part*	1
	Sugar, in coarse powder, *six parts*	6
	Water, *a sufficient quantity*	q. s.

Triturate the Lime and Sugar thoroughly in a mortar, and then add the mixture to Boiling Water, *ten parts* 10
contained in a tinned iron or bright copper vessel. Boil the mixture for five minutes with constant stirring. Then dilute it with an *equal volume* of Water, and filter through white paper. Finally evaporate it to *twenty parts* 20

¶ Dr. Squibb's Formula is:

Lime . . .	400 grs.
Sugar . . .	2,300 "
Boil. Water . .	8 fl. ʒ
Final bulk . . .	1 pint.

Strength: 1 gr. of Lime in 25 minims.

This may be converted into:

400 grs.	4	4	1
2,300 "	23	24	6
3,600 "	36	36	9
			20

Strength: 1 part of Lime (or as much as has been dissolved) in 20 *parts* of Syrup.

Mr. Sheppard recommends the proportions: Lime, 4; Sugar, 40; Boil. Water, 40; Final product, 90 parts.

***Syrupus Ferri Bromidi.** *Syrup of Bromide of Iron.*

Take of	Bromine, *fourteen parts*	14
	Iron, in the form of fine wire, and cut into small pieces, *seven parts*	7
	Distilled Water, *twenty-two parts*	22
	Syrup, *a sufficient quantity*	q. s.

To the Distilled Water, contained in a flask of thin glass, add the Iron wire and Bromine; shake the mixture occasionally until the reaction ceases, and the solution has acquired a green color and has lost the smell of Bromine. Then having introduced
Syrup, *one hundred and sixty parts* 160
into a tared bottle, heat it by means of a water-bath to 100° C. (= 212° F.), and, through a funnel introduced into the mouth of the bottle, filter into it the solution already prepared, and still hot. When this has passed, close the bottle, shake it thoroughly, and, when the liquid has cooled, add *sufficient* Syrup to make the product weigh *two hundred parts* . . 200

Lastly, again shake the bottle, and transfer its contents to small vials, which must be securely stopped.

Char.—A transparent liquid, of a pale-green color. It deposits no sediment by keeping, and does not tinge solution of starch yellow (absence of free bromine). Mixed with sulphuric acid, it becomes reddish-brown, and the mixture emits red-brown vapors when heated.

100 parts of this syrup contain 9.45 parts of ferrous bromide, which are completely precipitated by 14.88 parts of silver nitrate; and the precipitate is entirely soluble in water of ammonia, diluted with its own volume of water.

¶ Syr. Ferri Brom. has been recommended for adoption, as it is used to some extent in the Eastern States. Stillé regards bromide of iron as a useless and even dangerous compound.

*** Syrupus Ferri Chloridi Viridis.** *Syrup of Green Chloride of Iron.*

Take of	Iron, in the form of fine wire, and cut into small pieces, *one part*	1
	Hydrochloric Acid, *four parts*	4
	Sugar, in coarse powder, *thirty parts*	30
	Water, *a sufficient quantity*	q. s.

Mix the Hydrochloric Acid with Water, *six parts* 6
Pour the mixture over the Iron, contained in a capacious porcelain capsule, or in a capacious flask, and heat gently until the liquid ceases to effervesce. Filter the liquid, while warm, and rinse the undissolved Iron and filter with warm Water, about *four parts* 4
Then add enough Water to make the whole liquid weigh *twenty parts* 20
and immediately add the Sugar, which is to be dissolved by agitation without heat.

¶ This formula is constructed after that furnished by Mr. S. A. D. Sheppard. The preparation appears to be used to some extent. The simplest way to distinguish, in pharmaceutical language, the *green ferrous* Ferri Chloridum from the *reddish-brown* Ferri Chloridum, appears to be to use the adjective *viridis*. If we were to readopt the term *protochloridum*, we would at once step back into the old nomenclature. On the other hand, it does not seem advisable to entirely recast the chemical nomenclature of the U. S. Ph. in accordance with the latest theories.

Syrupus Ferri Iodidi. *Syrup of Iodide of Iron.*

Take of	Iodine, *sixteen parts*	16
	Iron, in the form of fine wire, and cut into small pieces, *five parts*	5
	Distilled Water, *twenty-three parts*	23
	Syrup, *a sufficient quantity*	q. s.

Mix the Iodine, Iron wire, and Distilled Water in a flask of thin glass, shake the mixture occasionally until the reaction ceases, and the solution

has acquired a green color and lost the smell of Iodine. Then having introduced Syrup, *one hundred and sixty parts* . . . . . 160 into a tared bottle, heat it by means of a water-bath to 100° C. (= 212° F.), and, through a funnel inserted into the mouth of the bottle, filter into it the solution already prepared, and still hot. When this has passed, close the bottle, shake it thoroughly, and, when the liquid has cooled, add *sufficient* Syrup to make the product weigh *two hundred parts* . . 200 Lastly, again shake the bottle, and transfer its contents to small vials, which must be securely stopped, and kept in a place accessible to daylight.

Char.—A transparent liquid, of a pale-green color. It deposits no sediment by keeping, and does not tinge solution of starch blue (absence of free Iodine). Mixed with sulphuric acid, it becomes brown, and the mixture emits violet vapors when heated. 100 parts of this syrup contain 9.76 parts of ferrous iodide, which are completely precipitated by 10.94 parts of silver nitrate; and the precipitate is but very slightly soluble in diluted water of ammonia.

¶ The above formula differs from the present one by only 0.3 parts of water; in other words, instead of 22.7 parts of water, 23 parts are directed to be used.

Present Formula.			Approximations.	
Iodine . .	2 ʒ	960 grs.	96	16
Iron Wire .	300 grs.	300 "	30	5
Water . .	3 fl. ʒ	1,367 "	136	23 (instead of 22.7.)
Syrup . .	16 fl. ʒ	9,602 "	960	160
Final Product .	20 fl. ʒ	12,000 "	1,200	200

*** Syrupus Ferri Lactophosphatis** (*a*). *Syrup of Lactophosphate of Iron.*

Take of Lactate of Iron, *one part* 1
Stronger Phosphoric Acid (spec. gr. 1.350), *five parts* . 5
Spirit of Lemon, *one part* 1
Simple Syrup, *a sufficient quantity* . . . . . q s.

Rub the Lactate of Iron, in a tared mortar, with Simple Syrup, *sixteen parts* . . . . . 16 until they are thoroughly mixed. Then add the Phosphoric Acid, and triturate until the Lactate of Iron is dissolved. Finally add the Spirit of Lemon, and enough Simple Syrup until the whole product weighs *one hunded parts* 100

¶ In this and several succeeding formulæ a stronger phosphoric acid, of the spec. grav. 1.350, has been introduced. Should a still stronger acid be made officinal, the quantities stated in these formulæ would, of course, have to be altered in proportion. Mr. Sheppard furnished the formula next following.

Syrupus Ferri Lactophosphatis (*b*). *Syrup of Lactophosphate of Iron.*

Take of Lactic Acid, *twelve parts* 12
Phosphate of Iron, freshly precipitated, *a sufficient quantity* . . . . . q. s.
Orange Flower Water, *fifteen parts* 15
Sugar, in coarse powder, *one hundred and twenty parts* 120

Mix the Lactic Acid with the Orange Flower Water and
Water, *twenty parts* 20
Add to the mixture sufficient of the fresh magma of Phosphate of Iron to make it nearly neutral. Filter, add Water, through the filter, until the filtrate weighs *ninety parts* 90
Dissolve the Sugar in the filtrate by agitation, without heat, and strain.

¶ The phosphate of iron intended is that which is at present officinal.

Syrupus Ferri, Quiniæ et Strychniæ Phosphatum.
Syrup of the Phosphates of Iron, Quinia, and Strychnia.

Take of White Phosphate of Iron, in very fine powder, *fifty-six parts* 56
Sulphate of Quinia, *thirty-six parts* 36
Sulphate of Strychnia, *one part* 1
Stronger Phosphoric Acid, spec. gr. 1.350, *two hundred and eighty parts* 280
Sugar, in coarse powder, *two thousand four hundred parts* 2400
Diluted Sulphuric Acid, *a sufficient quantity* . . . q. s.
Water of Ammonia, *a sufficient quantity* . . . . q. s.
Water, *a sufficient quantity* . . . . . q. s
Simple Syrup, *a sufficient quantity* . . . . . q. s.
Distilled Water, *a sufficient quantity* . . . . . q. s.

Dissolve the Sugar in
Distilled Water, *one thousand two hundred parts* 1200
with the aid of a gentle heat, and allow the Syrup to cool.
Mix the Sulphates of Quinia and Strychnia with
Water, *two hundred and fifty parts* 250
dissolve them by the aid of Diluted Sulphuric Acid, and precipitate the Quinia and Strychnia by the addition of Water of Ammonia in slight excess. Wash the precipitated alkaloids on a muslin strainer with cold
Water, *five hundred parts* 500
then forcibly express the remaining liquid.
Triturate the precipitated alkaloids, and the Phosphate of Iron, with the Stronger Phosphoric Acid, until they are dissolved; then add the Syrup and strain it into a tared bottle. Wash the strainer with
Simple Syrup, *a sufficient quantity* . . . . . q. s.
to make the product weigh *four thousand parts* 4000
Lastly keep the product in well-closed bottles protected from the light.

¶ This syrup, if made with the so-called ferr*ous* phosphate, is apt to precipitate, after a while, a sediment of basic phosphate. If made with ferr*ic* phosphate, it will generally keep clear, provided it was carefully strained. The so-called ferrous phosphate of pharmacy not being strictly a ferrous salt, but a mixture of ferr*ous* and ferr*ic* salts, it cannot make much difference, if the ferric salt be entirely substituted for it. There is no need of employing the phosphate of iron in a freshly precipitated condition. If it is made according to the formula given above (p. 61), it will be readily

soluble in the acid. If, however, it is desired to prepare it specially for the present syrup, the following will be the quantities of the ingredients required to prepare about 56 parts of ferric phosphate:

Solution of Chloride of Iron, *one hundred and sixty parts*	160
Phosphate of Sodium, *one hundred and thirty parts*	130
Acetate of Sodium, *forty-seven parts*	47

As stated on page 62, there is no need of using the acetate of sodium, and if this is left out, the proportions of chloride of iron and phosphate of sodium may be readily calculated from the working formula there given.

Some authors make the genitive plural of *phosphas*, *nitras*, etc., in *ium*, viz.: *phosphatium*, *nitratium*, etc. But the small number of classic Latin nouns ending in *as*, *ātis*, preceded by another consonant than *t*, forms the gen. plur. usually in *um*. Hence the form *phosphatum* is preferable.

Syrupus Fuscus. *Molasses.*

The impure, dark-colored syrup obtained as a residue in refining sugar from *Saccharum officinarum* Lin.

Char.—Its spec. grav. is between 1.350 and 1.400. Two volumes of molasses mixed with three volumes of 90% alcohol should yield, after a few minutes, a clear brown solution (absence of glucose, at least in quantities over 10 per cent).

***Syrupus Hypophosphitum Compositus** (*a*).

Compound Syrup of the Hypophosphites.

Take of	Hypophosphite of Calcium, *thirty parts*	30
	Hypophosphite of Sodium, *ten parts*	10
	Hypophosphite of Potassium, *ten parts*	10
	Citric Acid, *one part*	1
	Spirit of Lemon, *two parts*	2
	Sugar, *four hundred and fifty parts*	450
	Water, *a sufficient quantity*	q. s.

Mix the three Hypophosphites, reduce them to powder, and gradually add, under trituration, Water, *three hundred parts* 300
Should there be a trifling residue undissolved, allow the solution to settle, pour off nearly the whole of it, and add the Citric Acid so that the residue may be dissolved. Then having mixed the liquids, add the Spirit of Lemon, and filter. Wash the filter with Water until the whole of the filtrate weighs *four hundred and fifty parts* 450
Finally dissolve in this the Sugar, by agitation, without heat, and strain.

¶ The proportions heretofore in use, and expressed in parts by weight, are the following:

		New Formula.
Calcium Hypophos.	27	30
Sodium Hypophos.	9	10
Potassium Hypophos.	9	10

Water	325	q. s.
Spirit of Lemon	2	2
(Total)	(373)	(400)
Sugar	488	500
Total Product	861	900

The amount of sugar has been reduced, as it is apt to partially separate in a solution of hypophosphites. Mr. S. A. D. Sheppard furnishes the following formula:

*** Syrupus Hypophosphitum Compositum** (*b*).

Compound Syrup of the Hypophosphites.

Take of	Hypophosphite of Calcium, *three parts*	3
	Hypophosphite of Sodium, *two parts*	2
	Hypophosphite of Potassium, *one part*	1
	Boiling Water, *thirty parts*	30
	Citric Acid, *one part*	1
	Tincture of Vanilla, *one part*	1
	Syrup, *fifty parts*	50

Dissolve the Hypophosphites in the Water, using the Citric Acid to dissolve the last portion; then add to the solution the Syrup and the Tincture of Vanilla. Filter through paper.

*** Syrupus Hypophosphitum Compositus cum Ferro.**

Compound Syrup of the Hypophosphites with Iron.

Take of	Lactate of Iron, *one part*	1
	Compound Syrup of the Hypophosphites, *ninety-nine parts*	99

Dissolve the Lactate of Iron in the Syrup by trituration.

¶ Mr. Sheppard's formula directed Lact. of Iron, 1; and Comp. Syrup of Hypophos., 90 parts. This has been altered to 99.

Syrupus Ipecacuanhæ (*a*). *Syrup of Ipecacuanha.*

Take of	Fluid Extract of Ipecacuanha, *five parts*	5
	Water, *a sufficient quantity*	q. s.
	Sugar, in coarse powder, *sixty parts*	60

Mix the Fluid Extract of Ipecacuanha with Water, *twenty-five parts* 25 and agitate the mixture frequently during a few hours. Then filter it through a well-wetted filter, and pass enough Water through the filter to make the whole filtrate weigh *forty parts* 40 Finally, add the Sugar, dissolve it by agitation, without heat, and strain.

Present Formula.

Fl. Ext. Ipecac.	2 fl. ʒ	ab. 960 grs.	1
Syrup	39 fl. ʒ	19,200 "	20

Mr. Sheppard furnishes the following formula:

Syrupus Ipecacuanhæ (*b*). *Syrup of Ipecacuanha.*

Take of Fluid Extract of Ipecacuanha, *five parts* 5
Precipitated Chalk, *one part* 1
Sugar, in coarse powder, *sixty parts* 60
Water, *a sufficient quantity* . . . . . q. s.

Rub the Fluid Extract of Ipecacuanha first with the Precipitated Chalk and Sugar, *four parts* 4
then with Water, *twenty-five parts* 25
gradually added, and filter.

Add enough Water through the filter to make the filtrate weigh *thirty-six parts* 36
Then add the remainder of the Sugar to the filtrate, dissolve it by agitation, without heat, and strain.

Syrupus Krameriæ. *Syrup of Krameria. Syrup of Rhatany.*

Take of Fluid Extract of Rhatany, *one part* 1
Simple Syrup, *two parts* 2

Mix them.

¶ There is no need of filtering, as some have recommended.

Syrupus Lactucarii. *Syrup of Lactucarium.*

Take of Fluid Extract of Lactucarium, *one part* 1
Simple Syrup, *fifteen parts* 15

Mix them.

¶ This is Mr. Lemberger's formula (see *Proc. Am. Pharm. Assoc.*, 26 [1878], 764). Mr. Sheppard has furnished a formula, starting with the exhaustion of Lactucarium by Benzin, in the same manner as Mr. Lemberger has proposed. The result is the same.

Syrupus Limonis (*a*). *Syrup of Lemon.*

Take of Lemon Juice, recently expressed and strained, *sixteen parts*, 16
Fresh Lemon Peel, *one part* 1
Sugar, in coarse powder, *twenty-four parts* 24

Heat the Lemon Juice to the boiling point; then add the Lemon Peel, and let the whole stand, well covered, until cold. Filter, and dissolve the Sugar in the filtrate, by agitation, without heat.

¶ The lemon juice should be heated to boiling, to coagulate and separate albuminous matters. The addition of lemon peel is a decided improvement. The present U. S. Ph. directs equal parts of lemon juice and water, while the Brit. Ph. only use pure lemon juice. It is certainly preferable to leave out the water. As made by the above formula, the syrup keeps well. Mr. Sheppard supplies the following formula.

Syrupus Limonis (*b*). *Syrup of Lemon.*

Take of	Lemon Juice, recently expressed and strained, *four parts*	4
	Water, *four parts*	4
	Sugar, in coarse powder, *fifteen parts*	15

Mix the Lemon Juice and Water.

Dissolve the Sugar in the mixture, by agitation, without heat, and strain.

*** Syrupus Phosphatum Compositus** (*a*). *Compound Syrup of the Phosphates.*

Take of	White Phosphate of Iron, *thirteen parts*	13
	Precipitated Carbonate of Calcium, *twenty-five parts*	25
	Carbonate of Potassium, *three parts*	3
	Carbonate of Sodium, *two parts*	2
	Orange Flower Water, *twenty parts*	20
	Sugar, in coarse powder, *six hundred parts*	600
	Tincture of Cudbear, *twelve parts*	12
	Stronger Phosphoric Acid (spec. gr. 1.350), *a sufficient quantity*	q. s.
	Distilled Water, *a sufficient quantity*	q. s.

Rub the Phosphate of Iron and the three Carbonates with the Orange Flower Water, in a capacious mortar, to a smooth paste; add

Distilled Water, *one hundred parts* 100

and afterwards Stronger Phosphoric Acid, *one hundred and ninety parts* 190

or sufficient to dissolve the salts. Then add the Tincture of Cudbear, and afterwards enough Distilled Water to make the whole weigh

five hundred parts 500

Filter the whole through a well-wetted filter upon the Sugar contained in a bottle, and when all the liquid has passed, close the bottle, and shake it until the Sugar is dissolved. Set it aside; and if, after 24 hours, a slight cloudiness or precipitate should have made its appearance, dissolve this by adding a small quantity of Stronger Phosphoric Acid in drops. Finally, strain the syrup.

¶ The above formula differ apparently a good deal from that proposed by Parrish. Yet, in the important constituents, this difference is but slight. The substitution of the ferric for the so-called ferrous phosphate produces a more permanent syrup; at the same time it hardly differs from the latter in a therapeutical point of view. Phosphate of calcium is much more readily prepared by supersaturating the Precipitated Carbonate of Calcium than by the circumstantial process of dissolving the phosphate in hydrochloric acid, reprecipitating, washing, and again dissolving it in phosphoric acid. The ferric phosphate in the formula is assumed to be already prepared, and in a dry condition. If it should be considered unnecessary to keep this salt specially prepared, the following process may be incorporated in the above formula, for preparing the 13 grammes required:

Take of	Solution of Chloride of Iron, *forty parts*	40
	Phosphate of Sodium, *thirty-one parts*	31
	Acetate of Sodium, *twelve parts*	12
	Water, *a sufficient quantity*	q. s.

Dissolve the Phosphate and Acetate of Sodium in Water, *three hundred parts* . 300
and add to this solution gradually, and under constant stirring, the Solution of Chloride of Iron, previously diluted with Water, *one hundred and twenty parts* 120
Wash the precipitated Phosphate of Iron, first by decantation with warm Water, using each time about *six hundred parts* 600
then transfer it to a muslin strainer, and continue the washing with Water, until the latter runs off tasteless. Allow the precipitate to drain.

In substituting this precipitate in the formula, allowance must, of course, be made for the water retained in the precipitate. Regarding the Acetate of Sodium, see remarks to *Syr. Ferri, Quiniæ et Strych. Phos.*

The strength of the Syrup is so calculated, that each teaspoonful contains about 1 grain of ferric phosphate, 2 grains of calcium phosphate, and fractions of a grain of the other phosphates. If it is desired to make the syrup with ferrous phosphate of the same strength, the following quantities would be required:

Sulphate of Iron, *thirty parts*	30
Phosphate of Sodium, *twenty-six parts*	26
Acetate of Sodium, *ten parts*	10

to be dissolved. and the precipitate (ferroso-ferric phosphate) treated as in the previous formula. This latter salt, however, requires a much larger quantity of phosphoric acid for solution.

The addition of coloring matters, devoid of medicinal properties, should be discountenanced on general principles. It can only be justified, when it is desirable to cause two or more very similar preparations to be distinguished from each other even in appearance. This is the case with many syrups, and on this ground, the coloring matter *may* be admitted into the present syrup. Cudbear is suggested as being more easily managed than either Santal of Cochineal.

The term "White Phosphate of Iron" has been chosen, in preference to "phosphate of sesquioxide of iron," or "ferric phosphate," as the former would be a step backwards in nomenclature, while the latter belongs to the present language of pure chemistry, rather than of practical pharmacy.

The following formula is furnished by Mr. Sheppard, and also produces a good syrup.

Syrupus Phosphatum Compositus (*b*). *Compound Syrup of the Phosphates.*

Take of	Sulphate of Iron, *seventy-eight parts*	78
	Phosphate of Sodium, *ninety-one parts*	91
	Precipitated Phosphate of Calcium, *ninety-one parts*	91
	Stronger Phosphoric Acid (Sp. Gr. 1.35), *three hundred parts*	300
	Carbonate of Sodium, *five parts*	5
	Carbonate of Potassium, *eight parts*	8
	Powdered Cochineal, *twelve parts*	12
	Sugar, in coarse powder, *fifteen hundred parts*	1500
	Orange Flower Water, *sixty parts*	60
	Hydrochloric Acid, *a sufficient quantity*	q. s.
	Stronger Water of Ammonia, *a sufficient quantity*	q. s.
	Water, *a sufficient quantity*	q. s.
Mix Stronger Phosphoric Acid, *twenty parts*		20
with Water, *five hundred parts*		500

Dissolve the Sugar in the mixture with the aid of a gentle heat. Allow the syrup to cool, and then filter it through paper.

Dissolve the Sulphate of Iron in
boiling Water, *one hundred and twenty parts* 120
and the Phosphate of Sodium in
boiling Water, *two hundred and forty parts* 240
Add the Sodium Solution to the Iron Solution, stirring constantly. Wash the precipitate of Phosphate of Iron very thoroughly, by decantation, with Water. Express the Water remaining after the last washing, and dissolve the residue in Stronger Phosphoric Acid, *sixty parts* . . 60

Mix the Precipitated Phosphate of Calcium with
boiling Water, *two hundred and forty parts* 240
and add to the mixture sufficient Hydrochloric Acid to make a solution. Allow this solution to cool, filter, and then add Stronger Water of Ammonia, stirring constantly, until the Phosphate of Calcium is precipitated, and the mixture is slighty alkaline to test-paper. Wash the precipitate, by decantation, with Water. Express the Water remaining after the last washing, dissolve the residue in
Stronger Phosphoric Acid, *sixty parts* 60
and add it to the Iron Solution.

Rub the Carbonates of Sodium and Potassium with the Powdered Cochineal, add the Orange Flower Water and
Stronger Phosphoric Acid, *ten parts* 10
and filter. Mix the filtrate with the Solution of the Phosphates of Calcium and Iron and the remainder of the Phosphoric Acid, and filter. Add this mixture to the Syrup, and then add Water to make the finished product weigh *three thousand two hundred and fifty parts* . . . 3250

*** Syrupus Picis Liquidæ.** *Syrup of Tar.*

Take of Tar, *ten parts* 10
Cold Water, *twenty parts* 20
Boiling Distilled Water, *one hundred parts* . . . 100
Sugar, in coarse powder, *one hundred parts* . . . 100

Upon the Tar, contained in a capacious vessel, pour the cold Water, and stir them frequently together during twenty-four hours. Then pour off the Water, and throw it away. Pour the Boiling Distilled Water upon the Tar, and stir the mixture briskly for fifteen minutes. Then set it aside for thirty-six hours, occasionally stirring. Finally, decant the Water, and filter. Lastly, in *seventy parts* 70
of the filtrate, dissolve the sugar by agitation, without heat.

¶ Some have proposed to make an alcoholic solution of tar, and to rub this with water and carbonate of magnesium. This would, however, result in a product having a disagreeable taste, bad keeping qualities, and not fully representing the soluble constituents of tar. The above formula yields a good product.

The treatment with cold water removes excess of acid and other bodies.

Syrupus Pruni Virginianæ. *Syrup of Wild Cherry.*

Take of	Wild Cherry, in coarse powder, *five parts*	5
	Sugar, in coarse powder, *twenty-six parts*	26
	Glycerin, *two parts*	2
	Water, *a sufficient quantity*	q. s.

Moisten the Wild Cherry thoroughly with Water, and allow it to stand for twenty-four hours in a close vessel. Then pack it firmly in a glass percolator, and gradually pour Water upon it, until the percolate weighs *sixteen parts* 16

Dissolve the Sugar in the liquid, by agitation, without heat, add the Glycerin, and strain.

¶ The addition of glycerin diminishes the astringent taste, and adds to the keeping qualities. The amount of sugar has been reduced just enough to make room for the glycerin, without altering the customary strength of the syrup.

Syrupus Rhei. *Syrup of Rhubarb.*

Take of	Fluid Extract of Rhubarb, *one part*	1
	Simple Syrup, *twelve parts*	12

Mix them thoroughly, and strain.

¶ The strength is the same as at present.

Syrupus Rhei Aromaticus (*a*). *Aromatic Syrup of Rhubarb.*

Take of	Rhubarb, in moderately fine powder, *ten parts*	10
	Cloves, in moderately fine powder, *two parts*	2
	Cinnamon, in moderately fine powder, *two parts*	2
	Nutmeg, in moderately fine powder, *one part*	1
	Simple Syrup, *three hundred and eighty parts*	380
	Alcohol, *a sufficient quantity*	q. s.
	Glycerin, *a sufficient quantity*	q. s.
	Water, *a sufficient quantity*	q. s.

Mix the three last-named liquids in the proportion of *eight parts* of Alcohol, *four parts* of Glycerin, and *four parts* of Water.

Mix the powders, and having moistened them with one-half of their weight of this menstruum, introduce them, after the lapse of two hours, into a conical percolator, and pour enough menstruum on top, until the percolate amounts to *fifty parts* 50

Add this to the Syrup, and mix thoroughly.

¶ If the formula, proposed for *Tinctura Rhei Aromatica* (see this), is adopted, the above process may be considerably shortened, as follows:

Syrupus Rhei Aromaticus (*b*). *Aromatic Syrup of Rhubarb.*

Take of	Aromatic Tincture of Rhubarb, *one part*	1
	Simple Syrup, *eight parts*	8

Mix them.

¶ Mr. Sheppard has furnished the following formula.

Syrupus Rhei Aromaticus (*c*). *Aromatic Syrup of Rhubarb.*

Take of	Rhubarb, in No. 40 powder, *ten parts*	10
	Cloves, in No. 40 powder, *two parts*	2
	Cassia, in No. 40 powder, *two parts*	2
	Nutmeg, in No. 40 powder, *one part*	1
	Sugar, in coarse powder, *four hundred parts*	400
	Clean Sand, *ten parts*	10
	Menstruum (Alcohol 1 part, Water 7 parts), *a sufficient quantity*	q. s.

Mix the powders with the Sand, dampen the mixture with a suitable quantity of the Menstruum, pack it moderately in a percolator, and gradually pour upon it the Menstruum, until *two hundred and fifty parts* 250 of percolate are obtained. Dissolve the Sugar in the percolate, by agitation, without heat, and strain.

¶ In this and some succeeding formulæ, the degree of fineness of powders is given by the number of meshes, per linear inch, in the sieve. By comparison with other formulæ, it will probably be agreed that this is the simplest and best method.

Syrupus Rosæ Gallicæ. *Syrup of Red Rose.*

Take of	Red Rose, in moderately fine powder, *four parts*	4
	Sugar, in coarse powder, *thirty-six parts*	36
	Water, *fourteen parts*	14
	Diluted Alcohol, *a sufficient quantity*	q. s.

Moisten the Red Rose with Diluted Alcohol, pack it firmly in a conical glass percolator and gradually pour Diluted Alcohol upon it until *two parts* 2 of tincture have passed. Set this aside and continue the percolation until *ten parts* 10 more of tincture are obtained. Evaporate this portion with a gentle heat to *two parts* 2 and mix it with the Water. Then add the Sugar and dissolve by agitation, without heat. Lastly, add the reserved tincture to the solution, mix thoroughly, and strain.

Syrupus Rubi. *Syrup of Blackberry.*

Take of Fluid Extract of Blackberry, *one part* 1
Simple Syrup, *four parts* 4

Mix them.

¶ Is as close an approximation to the present formula as is practicable.

*** Syrupus Rubi Idæi.** *Syrup of Strawberry.*

Take of Fresh ripe Strawberries, *any convenient quantity* . . q. s.
Sugar, *a sufficient quantity* . . . . . q. s.

Reduce the Strawberries to a pulp, and let it stand at rest for three days. Separate the juice by pressing, and set it aside until it has completely fermented and become clear. Then filter it. Mix of the Filtered Juice, *six parts* 6
with Sugar, *nine parts* 9
heat to boiling, avoiding the use of tinned vessels, and strain.

¶ Recommended for adoption as a grateful adjuvant and flavoring agent. The proportion of juice in the Germ. Pharm. is 5 parts; the *Germ. Pharm. Rep.* recommends to increase it to 6 parts.

Syrupus Sarsaparillæ Compositus (*a*). *Compound Syrup of Sarsaparilla.*

Take of Sarsaparilla, in No. 40 powder, *twenty-four parts* . . 24
Guaiacum Wood, in No. 40 powder, *three parts* . . 3
Pale Rose, in No. 40 powder, *two parts* 2
Liquorice Root, in No. 40 powder, *two parts* . . . 2
Senna, in No. 40 powder, *two parts* 2
Sassafras, in No. 20 powder, *one part* 1
Anise, in No. 20 powder, *one part* 1
Gaultheria, in No. 20 powder, *one part* 1
Sugar, in coarse powder, *ninety-six parts* 96
Water, *a sufficient quantity* . . . . . q. s.
Diluted Alcohol, *a sufficient quantity* . . . . . q. s.

Mix the solid ingredients, except the Sugar, with
Diluted Alcohol, *forty-five parts* 45
and allow the mixture to stand for two (2) days, then transfer it to a conical percolator, and gradually pour upon it Diluted Alcohol until the percolate weighs *ninety parts* 90
Evaporate this on a water-bath until it weighs *forty-eight parts* . . 48
add Water, *sixteen parts* 16
and filter. If necessary, pass Water through the filter until the whole filtrate weighs *sixty-four parts* 64
Then add the Sugar, dissolve it by agitation, without heat, and strain.
The whole product should weigh *one hundred and sixty parts* . . . 160

¶ The proportions of this formula are as nearly as possible those of the present U. S. Ph. In order to avoid unwieldy figures which would have been necessitated by the minute proportion of Essential Oils of Sassafras, Anise, and Gaultheria, these latter were replaced by the crude drugs, in about the proportion corresponding to the oils. The resulting syrup is excellent. Mr. Sheppard furnished the following formula:

Syrupus Sarsaparillæ Compositus (*b*). *Compound Syrup of Sarsaparilla.*

Take of	Sarsaparilla, in No. 40 powder, *forty parts*	40
	Pale Rose, in No. 40 powder, *three parts*	3
	Liquorice Root, in No. 40 powder, *three parts*	3
	Senna, in No. 40 powder, *three parts*	3
	Oil of Sassafras, *two one-hundredths of one part*	.02
	Oil of Anise, *two one-hundredths of one part*	.02
	Oil of Gaultheria, *two one-hundredths of one part*	.02
	Precipitated Phosphate of Calcium, *four-tenths of one part*,	.4
	Sugar, in coarse powder, *one hundred and fifty parts*	150
	Diluted Alcohol, *a sufficient quantity*	q. s.
	Water, *a sufficient quantity*	q. s.

Mix the Sarsaparilla, Pale Rose, Liquorice Root, and Senna. Dampen the mixture with a small quantity of the Diluted Alcohol; transfer it to a percolator, and gradually pour Diluted Alcohol upon it until the liquid begins to drop from the percolator. Then close the lower orifice with a cork and allow it to stand for twenty-four (24) hours. The cork is then to be removed and more Diluted Alcohol gradually poured on until *one hundred and fifty parts* 150
of tincture have passed.

Evaporate this tincture, by means of a water-bath, to *eighty parts* . 80
Rub the Oils, first with the Precipitated Phosphate of Calcium and Sugar, *three parts* 3
then with the evaporated tincture, gradually added, and filter. Add Water, through the filter, to make the filtrate weigh *eighty-four parts* . 84
Add the remainder of the Sugar to the filtrate, dissolve by agitation, without heat, and strain.

Syrupus Scillæ. *Syrup of Squill.*

Take of	Vinegar of Squill, *two parts*	2
	Sugar, in coarse powder, *three parts*	3
	Water, *a sufficient quantity*	q. s.

Heat the Vinegar of Squill, contained in a glass or porcelain vessel, to the boiling point, and filter, while hot. Wash the filter with enough Water to make the filtrate weigh *two parts* 2
Dissolve the Sugar in the latter by agitation, without heat, and strain.

Syrupus Scillæ Compositus (*a*). *Compound Syrup of Squill.*

Take of	Squill, in moderately fine powder, *forty parts* . . .	40
	Seneka, in moderately fine powder, *forty parts* . .	40
	Tartrate of Antimony and Potassium, *one part* . . .	1
	Sugar, in coarse powder, *four hundred and twenty parts*	420
	Diluted Alcohol, *a sufficient quantity*	q. s.
	Water, *a sufficient quantity*	q. s.

Mix the Squill and Seneka, and having moistened the mixture with **Diluted Alcohol**, *one hundred parts* . . . . . 100 **allow it to** stand for one hour. **Then transfer it to a** conical percolator, **and pour** Diluted Alcohol upon it until the percolate amounts to *two hundred parts* . . . . . 200 **Boil this** for a few minutes, let it stand until cold, and filter. Evaporate **the filtrate** by means of a water-bath to *one hundred parts* . . . 100 **and add** to it Boiling Water, *one hundred and sixteen parts* . . . 116

Dissolve the Sugar in the liquid by agitation, without heat. **Lastly, dissolve** the Tartrate of Antimony and Potassium in a small quantity of **this Syrup**, by the aid of heat, mix the solution with the remainder of the **syrup**, and strain.

Present Formula.		Multiplied by 10.	Approximate Weights.
Sugar	42 ʒ	420 ʒ	420
Squill	4 ʒ	40 ʒ	40
Seneka	4 ʒ	40 ʒ	40
Tart. Emetic	48 gr.	1 ʒ	1
Moisten with Dil. Alc.	8 fl. ʒ	80 fl. ʒ	100
Obtain Tincture:	16 fl. ʒ	160 fl. ʒ	200
Evaporate to:	8 fl. ʒ	80 fl. ʒ	100
Add Boiling Water:	14 fl. ʒ	140 fl. ʒ	116
Total Product:	48 fl. ʒ	480 fl. ʒ	=600 ʒ

¶ The Syrup of the present U. S. Ph. contains 1 gr. each of Squill and Seneka in 15 *grains* of Syrup. In order to retain the proportion, it was only necessary to translate the fl. ʒ of the end-product into troy ounces. 600 parts of the Syrup contain 40 each of Squill and Seneka; or 15 parts contain 1 each. The proportion between the liquid and the Sugar has been altered, so as to approach more closely to that used in making Simple Syrup.—Mr. Sheppard furnished the following formula:

Syrupus Scillæ Compositus (*b*). *Compound Syrup of Squill.*

Take of	Squill, in No. 30 powder, *forty parts*	40
	Seneka, in No. 40 powder, *forty parts*	40
	Tartrate of Antimony and Potassium, *one part* . . .	1
	Sugar, in coarse powder, *four hundred and fifty parts* .	450
	Precipitated Phosphate of Calcium, *three parts* . . .	3
	Diluted Alcohol, *a sufficient quantity*	q. s.
	Water, *a sufficient quantity*	q. s.

Mix the Squill and Seneka, and having moistened the mixture with **Diluted Alcohol**, *one hundred parts* 100

allow it to stand for one hour. Then transfer it to a percolator, and pour upon it Diluted Alcohol until *four hundred parts* 400
of tincture have passed.

Boil this for a few minutes, then evaporate, by means of a water-bath, to *one hundred and fifty parts* 150
Add boiling Water, *fifty parts* 50
Triturate the mixture with the Precipitated Phosphate of Calcium, filter, and add, through the filter, sufficient warm Water to make the filtrate weigh *two hundred and forty parts* 240
Dissolve the Sugar in the filtrate, by agitation, without heat, and strain.

Lastly, dissolve the Tartrate of Antimony and Potassium in a small quantity of this Syrup, by the aid of heat, and mix the solution with the remainder of the Syrup.

Syrupus Senegæ. *Syrup of Seneka.*

Take of	Fluid Extract of Seneka, *forty parts*	40
	Water of Ammonia, *one part*	1
	Precipitated Phosphate of Calcium, *four parts*	4
	Sugar, *one hundred and fifty parts*	150
	Water, *a sufficient quantity*	q. s.

Mix the Fluid Extract with Water, *sixty parts* 60
add the Water of Ammonia, shake well, and allow it to stand at rest for a few hours. Triturate the Phosphate of Calcium with a small quantity of the liquid to a smooth paste, add this to the remainder of the liquid, agitate well, and filter it through a well-wetted filter. Wash the filter with enough Water to make the whole of the filtrate weigh
one hundred parts 100
To this add the Sugar, dissolve it by agitation, without heat, and strain.
The product should weigh *two hundred and fifty parts* 250

¶ The formula of the present U. S. Ph. directs Seneka to be percolated, the percolate to be evaporated, etc. This may be much simplified by using the above process. Since the addition of water generally precipitates, mixed with pectin bodies, some of the useful constituents of Seneka, it is advisable to add Water of Ammonia in the proportion given in the formula. This addition also permits the employment of the Phosphate of Calcium as a triturating agent, as it remains entirely unacted upon in the alkaline solution. The strength of the Syrup, according to the present U. S. Ph., expressed in parts by weight, is 8 of Seneka in 46 of Syrup. The above formula, therefore, should contain 43 of Seneka in 250. Instead of 43, the round number 40 was chosen.

***Syrupus Sennæ.** *Syrup of Senna.*

Take of	Senna, bruised, *thirty-three parts*	33
	Sugar, in coarse powder, *fifty-eight parts*	58
	Alcohol, *four parts*	4
	Oil of Coriander, *a sufficient quantity*	q. s.
	Water, *a sufficient quantity*	q. s.

Digest the Senna in Water, *one hundred and sixty parts* . . 160
for 24 hours at 49° C. (=120° F.); express and strain. Digest the marc
again with Water, *seventy parts* 70
for six hours at the same temperature, and again express and strain.
Mix the strained liquids, and evaporate them to *thirty parts* . . 30
When cold, add the Alcohol, previously mixed with *one per cent* of Oil
of Coriander, filter, and pass enough Water through the filter to make
the whole filtrate weigh *forty-two parts* 42
Then add the Sugar, and dissolve it by agitation, without heat, and strain.
The product should weigh *one hundred parts* 100

¶ The formula has been constructed after the Brit. Pharm., but the quantity of Senna has been reduced from 38 to 33 per cent, the latter being then about ⅓. The Oil of Coriander is difficult to adjust in the formula. The Brit. Pharm. takes 3 minims for 2 fl. oz. of alcohol, which is about 0.5 per cent.

***Syrupus Simplex** (*a*). *Simple Syrup.*

SYN.—*Syrupus*, U. S. Ph. of 1870.

Take of Sugar, in coarse powder, *sixty-five parts* 65
Distilled Water, *a sufficient quantity* . . . . . q. s.

Introduce the Sugar into a conical percolator, into the neck of which a piece of coarse wet sponge has been inserted, and pour upon it
Distilled Water, *thirty-five parts* 35
When the liquid begins to drop from the orifice, close the latter with a cork, and let the percolator stand in a moderately warm place until about half of the Sugar has dissolved. Then remove the cork, and allow the Syrup to drop. Return the first portion, if not quite clear, and finally, when no more liquid passes, and all the Sugar has been dissolved, pass enough Distilled Water through the percolator to make the product weigh *one hundred parts* 100

¶ This formula has been introduced as a sample for syrups made by percolation; but is not recommended by the Committee.

Syrupus Simplex (*b*). *Simple Syrup.*

Take of Sugar, in coarse powder, *sixty-five parts* 65
Distilled Water, *a sufficient quantity* . . . . . q. s.

Dissolve the Sugar, with the aid of heat, in
Distilled Water, *thirty-five parts* 35
raise the temperature to the boiling point, and strain the solution while hot. Pass enough Distilled Water through the strainer to make the product weigh *one hundred parts* 100

¶ The strength of the Syrup, as made by either of the foregoing processes, varies only by a trifle from that of the present U. S. Ph.

Present Formula.	Percentage.		Changed to:	
Sugar . . .	36 ℥	36 ℥	65.45	65
Water	20 fl. ℥	19 ℥	34.54	35
Final Product . .	55 fl. ℥	55 ℥	100	100

¶ The title *Syrupus Simplex* is generally preferred, and is proposed to be restored. The proportions of the Germ. Pharm. are 10 parts (or 35.7%) of water, and 18 parts (or 64.3%) of Sugar.—Simple Syrup may, of course, likewise be made by the cold process, and the above formula may be altered accordingly. But since heat always causes the separation and elimination of more or less foreign substances and impurities, which otherwise would remain, it seems advisable to retain the direction "to raise to the boiling point."

* Syrupus Stillingiæ Compositus. *Compound Syrup of Stillingia.*

Take of	Stillingia, in fine powder, *six parts*	6
	Turkey Corn (Corydalis), in fine powder, *six parts* . .	6
	Blue Flag, in fine powder, *three parts*	3
	Elder Flowers, in moderately fine powder, *three parts* .	3
	Pipsissewa, in moderately fine powder, *three parts* . .	3
	Coriander, in moderately fine powder, *two parts* . . .	2
	Prickly Ash Berries, bruised, *two parts*	2
	Sugar, in coarse powder, *fifty-five parts*	55
	Alcohol, *a sufficient quantity*	q. s.
	Glycerin, *a sufficient quantity*	q. s.
	Water, *a sufficient quantity*	q. s.

Mix the liquids in the proportion of 1 *part* of Alcohol, 2 *parts* of Glycerin, and 4 *parts* of Water. Then having mixed the powders, moisten them with a sufficient quantity of the menstruum, pack them tightly in a conical percolator, and pour enough of the menstruum on top, so that the mixed powders will be covered by it, when the liquid begins to drop from the orifice. Close the latter with a cork, and set the percolator aside, in a moderately warm place, for 4 days. Then remove the cork, and allow the liquid to drop from the percolator, pouring from time to time more menstruum on top, until there have passed *thirty-five parts* 35

Set this portion aside, and continue the percolation until *twenty-five parts* 25

more of percolate have been obtained. Evaporate the latter, on a water-bath, at a temperature not exceeding 65° C. (=149° F.), until it is reduced to *ten parts* 10

Then mix it with the reserved portion, filter it through paper, and pass enough of the above-described menstruum through the filter, to make the whole filtrate weigh *forty-five parts* 45

Finally dissolve in this the Sugar by agitation, without heat, and strain.

¶ The strength of this syrup is, as nearly as possible, that usually employed or quoted (by King, etc.).

Syrupus Tolutanus. *Syrup of Tolu.*

Take of Balsam of Tolu, *four parts* 4
Sugar, in coarse powder, *sixty-five parts* 65
Distilled Water, *a sufficient quantity* . . . . . q.s.

Add the Balsam to the Sugar, mixed with Distilled Water, *thirty-five parts* 35
and digest the whole, in a covered vessel, at a temperature not exceeding 82° C. (=180° F.), for two (2) hours. Then allow the mixture to become cold, strain through a well-wetted muslin strainer, and wash the latter with enough Distilled Water, to make the product weigh *one hundred parts* 100

¶ Digesting the balsam with the water *and* sugar is far preferable to digesting the balsam with the water alone. The sugar aids solution of the aromatic principles and of a little of the resin. The formula, as above given, has been long tested by experience, and yields a very good product. The strength, in sugar, is the same as that of simple syrup. The present U. S. Ph. directs the Tincture of Tolu to be triturated with sugar, water, and carbonate of magnesium. It is now well recognized that the latter substance makes the syrup slightly alkaline, and therefore incompatible with alkaloidal salts.

Syrupus Zingiberis (*a*). *Syrup of Ginger.*

Take of Fluid Extract of Ginger, *one part* 1
Sugar, in coarse powder, *forty-eight parts* 48
Water, *a sufficient quantity* . . . . . q. s.

Rub the Fluid Extract of Ginger with Sugar, *sixteen parts* . . 16
and expose the mixture to a heat not exceeding 60° (=140° F.), until all the alcohol has evaporated. Then mix it with
Water, *twenty-eight parts* 28
stir well, and allow it to become cold, agitating occasionally to promote solution. Filter the solution, and wash the filter with enough Water to make the whole filtrate weigh *forty-four parts* 44
Then dissolve in it the remainder of the Sugar by agitation, without heat, and strain.

Syrupus Zingiberis (*b*). *Syrup of Ginger.*

Take of Fluid Extract of Ginger, *four parts* 4
Sugar, *twenty-eight parts* 28
Lime, slaked, and in fine powder, *a sufficient quantity* . q. s.
Diluted Alcohol, *a sufficient quantity* . . . . . q. s.
Diluted Sulphuric Acid, *a sufficient quantity* . . . q. s.
Water, *a sufficient quantity* . . . . . q. s.

To the Fluid Extract of Ginger add a sufficient quantity of the Lime, in small portions at a time, and shaking vigorously after each addition, until the Fluid Extract ceases to lose color. Throw the whole

on a filter, and when the liquid has passed through, wash the residue with Diluted Alcohol, until the filtrate weighs *eight parts* 8
Now add, drop by drop, Diluted Sulphuric Acid to the filtrate, until the yellow color of the latter suddenly disappears, let the whole stand at rest for 24 hours, filter, and add Water to make it weigh *sixteen parts* . 16
Shake this with some powdered pumice-stone, and filter it at a temperature between 0°–4.4° C. (=32°–40° F.), or at least at as low a temperature as is possible. Pass enough Diluted Alcohol through the filter to make the filtrate weigh *sixteen parts* 16
In this dissolve the Sugar, and strain.

¶ This formula is constructed on the basis of Mr. J. C. Tresh's process, presented at the last meeting of the British Pharmaceutical Conference.

Tabacum.—Tamarindus.—Tanacetum (*d*).—**Tapioca** (*d;* see *Avenæ Farina*). **Taraxacum.—Terebinthina.—Terebinthina Canadensis.—Testa** (*d*).—**Testa Præparata** (*d*).—*** Thea.—* Thuja** (fresh).—*** Thymol.—* Thymus** (as source of *Ol. Thymi*).—*** Tilia** (the flowers).

Tincturæ. *Tinctures.*

(By Prof. Joseph P. Remington.)

¶ [The whole of this chapter up to and including Tinctura Zingiberis, is contributed by Prof. Joseph P. Remington, excepting only those portions which are enclosed in brackets [ ], which are added by the Chairman of the Committee.]

In preparing the following Report, the various suggestions and propositions of contributors to the Pharmaceutical Journals were considered, and in many cases tried practically. A great deal of time was consumed in this way, and the writer regrets that the Report could not have been finished at an earlier day. Wherever a deviation from the present formula has been proposed, the tincture has been prepared experimentally; and samples of the finished preparations, with the dregs, showing the ability of the menstruum to exhaust the drug, accompany this Report.† Although many changes are proposed, the endeavor has been made to avoid suggesting alterations, unless they could be clearly proved to be improvements. It is possible that a larger number of new tinctures are suggested than are desirable; but the many useful additions of late to our own Materia Medica, and the actual demand for preparations of them, if not in one locality, then in another, induced the writer to at least propose them, leaving the work of excision to the Final Committee, who have to judge of the wants of the whole country.

¶ [The terms "Alcohol," and "Stronger Alcohol," occurring in the following formulæ for Tinctures, are understood to denote those at present recognized by the U. S. Ph., namely those of spec. gr. 0.835, and 0.817 respectively.

The *Germ. Pharm. Rep.* contains the following recommendation regarding *Tinctures*, for the proposed new German Pharmacopœia:

† This Report, together with the samples, was presented by the author at the last meeting of the Am. Pharm. Asso., at Indianapolis, Sept., 1879.

"Tinctures are to be prepared by maceration, in closed vessels, at ordinary temperature.—A digestion at 35-40° C., continued for some time [which was directed to be used in certain cases by the present German Pharm:], is impracticable; and tinctures prepared by maceration, such as they were directed to be made by the older pharmacopœias, do not differ materially from those made by digestion. Should digestion be retained, it will be necessary to replace any loss of menstruum *before* pressing. After the tincture has stood for one or two days in a cool place, it may be filtered. It is not necessary that tinctures should be filtered in the store-room, where they are to be kept; any room having a temperature not exceeding 15° C. will answer. All tinctures must be dispensed clear, and filtered. In the case of barks, roots, and woody tissue, it is to be specified that they must be employed in the form of coarse powder for preparing tinctures."]

¶ [*Explanation of Tabular Columns.* The headings of the tabular columns have been omitted in the several formulæ for tinctures following below, in order to save trouble in composition. They are easily understood however, and are as follows:]

New Formula.		Old Formula.		
Parts by Weight.	Process.	Proportion in present U. S. Ph.	Exact Weight.	Approximations.

Tinctura Aconiti Radicis. *Tincture of Aconite Root.*

	New Formula.		Old Formula.			
Aconite Root, No. 50 powder,	2	Perc.	12 ʒ	5,760 grs.	1	2
Alcohol, sufficient to make,	5		2 *O*	12,046 "	2.1	5

¶ It is proposed to slightly decrease the strength of the present tincture. The tincture of the leaves having been abandoned (it being a much weaker preparation), it was believed that no disadvantage would result from this slight change, whilst a preparation approaching more nearly to the strength of the discarded could be adopted. Other strong liquid preparations will doubtless be officinal, *Liniment* and *Fluid Extract*, which will be available when concentration is desired. The proposed reduction in strength amounts only to 8.8%, and in view of the dangerous character of this tincture, the writer would favor a still further reduction in strength, particularly as this is *the* liquid preparation of Aconite which is now used internally, very frequently in combination with aqueous mixtures. If the strength could be reduced, diluted alcohol could be used as a menstruum, and this would be a desideratum when ordered in prescriptions variously combined.

[The addition of tartaric acid might be advocated for the same reasons as were given above, under *Linimentum Aconiti*. The strength of the Brit. Pharm. tincture is about 1 in 8.]

Tinctura Aloes. *Tincture of Aloes.*

	New Formula.		Old Formula.			
Socotrine Aloes, No. 50 powder,	1	Mac.	1 ʒ	480 grs.	1	1
Extract of Liquorice	1		3 ʒ	1,440 "	3	3
Alcohol, in the proportion of	7		½ *O*	3,012 "	7	7
Distilled Water, in the proportion of	7		1½ *O*	10,937 "	22.8	21
to make	10					

¶ The principal fault in the U. S. P. (1870) preparation is its deficiency in strength and activity. Although not largely prescribed, it is yet used sufficiently to be retained. No serious objection exists to increasing the strength, and the proposed increase to 10% is not deemed too great if it is desired to make the tincture really useful and active.

Tinctura Aloes et Myrrhæ. *Tincture of Aloes and Myrrh.*

	New Formula.		Old Formula.			
Socotrine Aloes, No. 50 powder,	1	Mac.	3 ʒ	1,440 grs.	1	1
Myrrh, No. 50 Powder . . .	1		3 ʒ	1,440 "	1	1
Alcohol, sufficient to make, .	10		2 O	12,040 ."	8.4	10

¶ The dropping of saffron in this preparation has caused a great deal of comment, and, in the opinion of the writer, it was a mistake, for although imparting little or no activity, its omission changed the character and appearance of this "time-honored" remedy which had a prominent place in the posthumous work of Paracelsus; but as changes are to be deprecated, except when absolutely called for, it probably would, on the score of economy, as well as for the reason mentioned, be best to retain as nearly as possible the present formula.

Tinctura Arnicæ. *Tincture of Arnica.*

	New Formula.		Old Formula.			
Arnica, No. 20 Powder . .	1	Perc.	6 ʒ	2,880 grs.	1	1 1
Alcohol, ...	–		1½ O	9,035 "	3.14	3
Water, ...	–		½ O	3,646 "	1.25	1
Diluted Alcohol, sufficient to make, ...	5		2 O			5

¶ This preparation, used almost exclusively in popular practice, and believed to be devoid of medicinal activity when applied externally (and it is nearly always used in this way), might, in accordance with the suggestions of several pharmaceutical writers, be made with a menstruum of diluted alcohol. If tightly packed and percolated slowly with diluted alcohol it may be exhausted when made in the proportion of 1 in 5, and Rother asserts that when made with diluted alcohol, 2 oz. to the pint, precipitation is avoided. Sample submitted: 1 in 5 diluted alcohol.

Tinctura Asafœtidæ. *Tincture of Asafœtida.*

	New Formula.		Old Formula.			
Asafœtida, bruised, . . .	1	Mac.	4 ʒ	1,920 grs.	1	1
Alcohol, sufficient to make, .	5		2 O	12,046 "	6	5

¶ The French and German pharmacopœias direct a stronger tincture (1:5) than either the British or United States, and it would be desirable to diminish the quantity of alcohol in the preparation on account of its therapeutic incompatibility. This change is also recommended on the practical ground that the asafœtida of commerce seems to be depreciating in quality year by year, and as there is no standard adopted by the pharmacopœia, and it would be difficult to prescribe a test for asafœtida which would be practical and reliable, better results from its use would follow an increase in strength.

Tinctura Aurantii. — *Tincture of Orange Peel.*

	New Formula.		Old Formula.			
Bitter Orange Peel, No. 40 Powder,	1	Perc.	4 ℥	1,920 grs.	1	1
Diluted Alcohol,	5		2 *O*	13,696 "	7.13	5

¶ This preparation is principally used as a tonic, and added to other combinations for this effect. Although credited in the books with the possession of properties due to the presence of volatile oil, it is the opinion of your reporter that a large proportion of the best bitter orange peel obtainable in this country is devoid of the flavor of oil of orange, on account of the volatile character of the oil and its liabilility to change in the necessary drying of the peel. On this account, the introduction of another tincture, for the purpose of flavoring, is suggested, to be made from fresh orange peel as follows:

* Tinctura Aurantii Recentis. — *Tincture of Fresh Orange Peel.*

	New Formula.	
The colored Portion of Sweet Orange Peel, recently separated from the Fruit by grating,	1	Perc.
Alcohol, sufficient to make,	5	

Pack the grated Orange Peel moderately in a cylindrical percolator, close the orifice with a cork and macerate for 24 hours, then remove the cork, and obtain by percolation, *five parts* 5

¶ This formula differs somewhat from the British preparation, in being made by percolation instead of maceration. It is believed that by grating the rind the vesicles containing the oil would be more thoroughly broken up than if merely sliced, and that the length of time (7 days) required by the British formula for maceration could be thus reduced. The superiority of this preparation as a flavoring agent cannot be doubted.

Tinctura Belladonnæ. — *Tincture of Belladonna.*

	New Formula.		Old Formula.			
Belladonna Leaves, recently dried, in No. 50 Powder,	1	Perc.	4 ℥	1,920 grs.	1	1
Diluted Alcohol, sufficient to make,	7		2 *O*	13,696 "	7.13	7

¶ In accordance with the views expressed by the chairman of the committee, as little change as possible is proposed for this dangerous preparation. The only suggestion which your reporter offers is to insert the word "moderately" before "fine" in the formula [No. 50 powder means "moderately fine;" "fine" would be No. 60 powder], for it is believed that with the menstruum in the proportion of 7 to 1, thorough exhaustion can be accomplished without requiring the powder of the degree of fineness ordered in the pharmacopœia of 1870. [As it is easier to obtain good belladonna root of tolerably uniform strength, it would be better to make tincture of belladonna from the *root*, in the proportion of 1 root to 10 of diluted alcohol.]

Tinctura Benzoini. *Tincture of Benzoin.*

	New Formula.		Old Formula.			
Benzoin, No. 40 Powder,	1	Mac.	6 ℥	2,880 grs.	1	1
Alcohol, sufficient to make,	5		2 *O*	12,046 "	4.18	5

¶ This tincture is best made by maceration. No change is recommended except the slight one of altering the strength a trifle in order to secure uniformity.

Tinctura Benzoini Composita. *Compound Tincture of Benzoin.*

	New Formula.		Old Formula.		
Benzoin, No. 20 powder,	6	Mac.	3 ℥	1,440 grs.	6
Socotrine Aloes, No. 20 powder,	1		½ ℥	240 "	1
Storax,	4		2 ℥	960 "	4
Balsam of Tolu,	2		1 ℥	480 "	2
Alcohol, sufficient to make,	50		2 *O*	12,046 "	50

¶ To follow out the custom of the previous revisions of the pharmacopœia, this preparation should again be subjected to the pruning process. Your reporter, however, would be well satisfied to recommend *no change*, for if this process of elimination be continued much farther, the preparation itself might well be abandoned and substituted by the simple tincture.

*** Tinctura Buchu.** *Tincture of Buchu.*

	New Formula.	
Buchu Leaves, No. 50 powder,	1	Perc.
Diluted Alcohol, sufficient to make,	5	

¶ There would seem to be a need for this preparation, as physicians continually prescribe it in combination with acetate of potassium and other diuretics which are, as they should be, given in large quantities of aqueous mixtures. Grahame has conclusively proved that buchu can be thoroughly exhausted by a menstruum composed of Stronger Alcohol, 2 parts; Water, 1 part, in making a fluid extract (*Am. Journ. Pharm.*, p. 350, 1859), and there is no difficulty in exhausting a relatively smaller quantity of drug with diluted alcohol. Alcohol is therapeutically contra-indicated in preparations intended to allay irritated conditions of the urinary passages, and this is another argument for the substitution of the weaker menstruum.

[*** Tinctura Calendulæ.** *Tincture of Calendula.*

	New Formula.	
Calendula, No. 20 powder,	1	Perc.
Diluted Alcohol, sufficient to make,	5	

¶ There is considerable demand for this tincture in different portions of the country. If it is to be introduced at all, it should be made precisely like Tinct. of Arnica.]

Tinctura Calumbæ (*a*). *Tincture of Colombo.*

		Old Formula.		
Colombo, No. 50 powder, . .	4 ℥	1,920 grs.	1	1
Diluted Alcohol, sufficient to make, ...	2 *O*	13,696 "	7.13	7

¶ Owing to the large proportion of pectin and starch present, and the mucilaginous character of colombo, it is almost impossible to obtain satisfactory results from percolation, if the menstruum is hydro-alcoholic or if the drug is in fine powder as directed by the pharmacopœia. The writer has for the last ten years been in the habit of using a No. 20 or coarse powder for preparations of colombo. In order to prevent precipitation it would be an improvement to increase the alcoholic strength, and therefore the following formula is suggested:

Tinctura Calumbæ (*b*). *Tincture of Colombo.*

	New Formula.	
Colombo, No. 20 powder, . .	1	Perc.
Alcohol, Water, in the proportion of	4 3	
to make, ...	10	

Tinctura Cannabis (*a*). *Tincture of Indian Hemp.*

	New Formula.		Old Formula.			
Extract of Indian Hemp, . .	1	Sol.	6 ℥	360 grs.	1	1
Alcohol, ...	14		1 *O*	6,023 "	17	14

¶ A slight increase in strength is recommended. Should not this preparation be made by percolating the crude drug itself, rather than the extract prepared from it, which is often unsatisfactory? If so, then the following is proposed:

Tinctura Cannabis (*b*). *Tincture of Indian Hemp.*

	New Formula.	
Indian Hemp, No. 50 powder, .	1	Perc.
Alcohol, sufficient to make, .	5	

¶ [The English title in the present U. S. Ph., "Tincture of Hemp," is an oversight.]

Tinctura Cantharidis (*a*). *Tincture of Cantharides.*

		Old Formula.	
Cantharides, No. 60 powder, .	1 ℥	480 grs.	1
Diluted Alcohol, sufficient to make, ...	2 *O*	13,696 "	28

¶ This preparation is rarely used internally, and, when so used, not often in combination with aqueous liquids, and the substitution of alcohol for diluted alcohol, as recommended by Kennedy and others, would be an improvement. Its principal use is to act as a stimulant to the scalp in hair preparations, and the officinal tincture, besides containing inert extractive matter, is objectionable pharmaceutically in caus-

ing turbid solutions in such preparations which almost invariably consist of alcohol holding in solution some fixed oil; the increase in strength in alcohol would not be objectionable therapeutically. The new formula proposed would be as follows:

Tinctura Cantharidis (*b*). *Tincture of Cantharides.*

	New Formula.
Cantharides, No. 50 powder,	1 Perc.
Alcohol, sufficient to make,	25

Tinctura Capsici (*a*). *Tincture of Capsicum.*

		Old Formula.		
Capsicum, No. 60 powder,	1 ℥	480 grs.	1	1
Dil. Alc., sufficient to make,	2 *O*	13,696 "	28	29

¶ Stronger alcohol is a better solvent for the active principles of capsicum, but, according to Rother, has the disadvantage of separating fixed oil. The officinal preparation, on the other hand, is prone to be turbid and grow unsightly from precipitation. The recommendation to use hydrate of potassium to combine with the fixed oil and resinous portions to form a better solution is hardly necessary. Good results may be obtained through the use of a solvent between the two extremes, viz., alcohol (spec. gr. 0.835). The proposed new formula is:

Tinctura Capsici (*b*). *Tincture of Caspicum.*

	New Formula.
Capsicum, No. 60 powder,	1 Perc.
Alcohol, sufficient to make,	25

Tinctura Cardamomi. *Tincture of Cardamom.*

	New Formula.		Old Formula.	
Cardamom, No. 60 powder,	1 Perc.	4 ℥	1,920 grs.	1
Diluted Alcohol, sufficient to make,	7	2 *O*	1,3696 "	7

¶ No change recommended.

Tinctura Cardamomi Composita (*a*). *Compound Tincture of Cardamom.*

		Old Formula.		
Cardamom,	360 grs.	360 "	6	6
Caraway,	120 "	120 "	2	2
Cinnamon, } No. 50 powder.	300 "	300 "	5	5
Cochineal,	60 "	60 "	1	1
Clarified Honey,	2 ℥	1,251 "	20	20
Diluted Alcohol, sufficient to make,	38 fl. ℥	16,264 grs.	270	266

¶ It has been well established by practical experience and noted by many writers, Squibb, Lemberger, and others, that it is better pharmacy to mix such drugs as those

contained in this preparation all together, and powder them together instead of separately, and then mixing the powders with each other as recommended by our pharmacopœia. It was not thought desirable to change very greatly the character of this preparation which is justly regarded as one of the elegant tinctures; there is one improvement which, though slight, would simplify it without affecting the taste or color to any extent, *i. e.*, the substitution of syrup for honey, as suggested by Wilder. It is yearly becoming more difficult for pharmacists in large cities and towns to obtain absolutely pure honey, and your reporter would recommend the dropping of honey from all preparations and substitution of sugar, where *it can be* conveniently done without materially affecting the utility or appearance of the preparation.

Tinctura Cardamomi Composita (*b*). *Compound Tincture of Cardamom.*

		New Formula.	
Cardamom, Caraway, Cinnamon, Cochineal, Sugar,	No. 50 powder,	4 2 4 1 12	Perc.
Diluted Alcohol, sufficient to make,		200	

Mix all of the solid ingredients, powder them together, and pass them through a No. 50 sieve. Then percolate with Diluted Alcohol, to obtain 200 parts.

¶ [Glycerin is probably the best substitute for honey, where the latter enters in small quantities, into liquid pharmaceutical preparations, such as Tinct. Cardam. Co., or Tr. Opii Camphorata. It has been long used by some of those pharmacists who had difficulty in obtaining good honey. A third formula is therefore offered:

Tinctura Cardamomi Composita (*c*). *Compound Tincture of Cardamom.*

Like the preceding, except that Glycerin, 12 parts, are substituted for the Sugar.]

Tinctura Castorei. *Tincture of Castor.*

New Formula.			Old Formula.			
Castor, bruised,	1	Mac.	2 ʒ	960 grs.	1	1
Alcohol, sufficient to make,	10		2 *O*	12,046 "	12.5	10

¶ With all due respect for the venerable age of this relic of antiquity, your reporter would feel quite satisfied to *now* let it depart in peace, and the Pharmacopœia of 1880 know it no more. If we must have it, however, would it not be well to increase the strength somewhat *as proposed*, 1 in 10 instead of 1 in 12½ ?

Tinctura Catechu * Composita. ** Compound Tincture of Catechu.*

		New Formula.		Old Formula.			
Catechu, Cinnamon,	No. 50 powder,	3 2	Perc.	3 ʒ 2 ʒ	1,440 grs. 960 "	1½ 1	3 2
Diluted Alcohol, sufficient to make,		25		2 *O*	13,696 "	14	25

¶ The writer is clearly of the opinion that this preparation should have "Composita" attached to it, if accuracy in nomenclature is sought for. The Cinnamon is present in almost as large a quantity as the active ingredient, and is quite an important factor in the preparation. *The title of a preparation should accurately indicate all of its component parts, or when this is inexpedient or impracticable, owing to the length of the name required, some addition like "compositus, a, um" should call attention invariably to the fact, so that physicians and others may not be misled.*

*** Tinctura Chirettæ.** *Tincture of Chiretta.*

	New Formula.	
Chiretta, No. 20 powder, . .	1	Perc.
Diluted Alcohol, sufficient to make, ...	10	

¶ Recommended on account of its frequent use by physicians (at least in Pennsylvania), associated with Taraxacum as a stimulant tonic in torpidity of the liver, and in combination with iron preparations for which it is well fitted on account of its freedom from tannin.

[* Tinctura Cimicifugæ. *Tincture of Cimicifuga.*

	New Formula.	
Cimicifuga, No. 80 powder, .	1	Perc.
Diluted Alcohol, sufficient to make, ...	5	

¶ This tincture is in considerable demand, and should be introduced.]

Tinctura Cinchonæ (*a*). *Tincture of Cinchona.*

	Old Formula.		
Yellow Cinchona, No. 50 powder, ...	6 ℥	2,880 grs.	4
Alcohol, ...	24 fl. ℥	9,084 "	12
Water, ...	8 fl. ℥	3,645 "	4

¶ The cinchona preparations have been troublesome, and are likely to continue so, owing to the presence of coloring matter, and their liability to deposit a sediment of cinchona red, containing variable quantities of the valuable alkaloids. With the view of preventing precipitation, several expedients have been tried: first, increasing the alcoholic strength; second, the addition of glycerin. Whilst either of these plans partially effects the desired result, by holding the offending substances in solution, both are subject to the same objection: that, when diluted or mixed with other liquids differing in alcoholic strength, precipitation takes place. In view of these facts and the apparent impossibility of securing a tincture which, whilst miscible with aqueous mixtures without precipitation, will itself be permanent and not deposit, your reporter recommends that at least one point be reached, rather than lose both, and a menstruum be adopted which will prevent deposition of sediment and secure as much permanency as can be attained. The experience of Squibb, Taylor, and others point to the addition of glycerin as the best means of accomplishing this object, and as the result of personal experiments, and a consideration of the pros and cons advanced by various writers, the following formula is proposed.

Tinctura Cinchonæ (*b*). *Tincture of Cinchona.*

	New Formula.	
Yellow Cinchona, No. 50 powder,	4	Perc.
Alcohol, } to be mixed in the proportion of	13	
Water, } to be mixed in the proportion of	5	
Glycerin, } to be mixed in the proportion of	2	
to make,	20	

Tinctura Cinchonæ Composita (*a*). *Compound Tincture of Cinchona.*

		Old Formula.	
Red Cinchona, } No. 50 powder.	4 ℥	1,920 grs.	5.3
Bitter Orange Peel, } No. 50 powder.	3 ℥	1,440 "	4
Serpentaria, } No. 50 powder.	6 ℥	360 "	1
Alcohol,	30 fl. ℥	11,293 "	31.37
Water,	10 fl. ℥	4,557 "	12.66

¶ In accordance with the views previously expressed, it is suggested that the drugs in this preparation be not directed to be in powder, but that *they shall be all mixed whole*, and together be reduced to moderately fine powder. It is feared that too often powdered drugs are obtained from dealers deficient in activity, particularly if their virtues depend upon volatile oils or principles impaired by age, as is the case here. If the operator, to strictly adhere to the pharmacopœia, is compelled to follow the course recommended, it is believed that a more active and perfect preparation will be the result. With regard to changes proposed in the formula, the restoration of saffron would personally be advocated by your reporter; but this will doubtless not meet with approval on the score of economy. The substitution of glycerin for a portion of the water and alcohol, for reasons before mentioned (see Tinctura Cinchonæ), is recommended in the proposed new formula, which is as follows:

Tinctura Cinchonæ Composita (*b*). *Compound Tincture of Cinchona.*

	New Formula.	
Red Cinchona, } No. 50 powder,	5	Perc.
Bitter Orange Peel, } No. 50 powder,	4	
Serpentaria, } No. 50 powder,	1	
Alcohol, } to be mixed in the proportions of	30	
Glycerin, } to be mixed in the proportions of	15	
Water, } to be mixed in the proportions of	5	
to make,	50	

Tinctura Cinnamomi. *Tincture of Cinnamon.*

	New Formula.		Old Formula.		
Cinnamon, No. 50 powder,	1	Perc.	3 ℥	1,440 grs.	1 1
Alcohol, } mixed in the proportion of	6		21⅓ fl. ℥	8,030 "	5.57 6
Water, } mixed in the proportion of	4		10⅔ fl. ℥	4,860 "	3.37 4
to make,	10				

¶ No change is recommended here, except the slight one necessary to reduce to convenient parts by weight.

*** Tinctura Cocci.** *Tincture of Cochineal.*

	New Formula.	
Cochineal, No. 40 Powder, . .	1	Perc.
Diluted Alcohol, sufficient to make, ...	10	

Tinctura Colchici. *Tincture of Colchicum.*

	New Formula.			Old Formula.		
Colchicum Seed, No. 50 powder,	1	Perc.	4 ʒ	1,920 grs.	1	1
Diluted Alcohol, sufficient to make, ...	7		2 O	13,696 "	7.13	7

¶ In accordance with the recommendation not to change the proportions of strong and dangerous tinctures, no alteration is suggested.

Tinctura Conii. *Tincture of Conium.*

	New Formula.			Old Formula.	
Conium Leaves, No. 60 powder,	1	Perc.	4 ʒ	1,920 grs.	1
Diluted Alcohol, sufficient to make, ...	7		2 O	13,696 "	7.13

¶ In view of the well-known superiority of the unripe fruit of conium and the equally well-known doubtful character of conium leaves, it would seem that there was but one course to pursue in this case, and that is, to make a tincture from the best and least variable portion of the plant, *i. e.*, the unripe fruit. Now as alcohol is therapeutically contra-indicated, it would be well to reduce the strength of the alcohol, and the following is suggested.

*** Tinctura Conii Fructus.** *Tincture of Conium Seed.*

	New Formula.	
Conium Seed, No. 50 powder, .	1	Perc.
Alcohol, } mixed in the proportion of	2	
Water, }	5	
to make, ...	7	

*** Tinctura Croci.** *Tincture of Saffron.*

	New Formula.	
Saffron, ...	1	Mac. &
Diluted Alcohol, sufficient to make, ...	10	Perc.

¶ Suggested as useful for coloring, and the strength adopted by the French and German Pharmacopœias is recommended.

Tinctura Cubebæ. *Tincture of Cubeb.*

	New Formula.			Old Formula.		
Cubeb, No. 50 powder, . .	1	Mac. &	4 ʒ	1,920 grs.	1	1
Diluted Alcohol, sufficient to make, ...	7	Perc.	2 O	13,696 "	7.13	7

¶ An alcoholic preparation of cubebs is oftentimes desired, although it is well known that if cubebs are to be thoroughly exhausted of their activity, an ethereal menstruum is preferable. The disadvantage of the oleoresin, however, is its inability to mix with aqueous mixtures, without the use of some emulsifying agent, whilst the tincture prepared as above may be mixed with alcoholic liquids containing water, in moderate quantities, without precipitation. Your reporter would suggest previous maceration here and slow percolation.

Tinctura Digitalis. *Tincture of Digitalis.*

	New Formula.			Old Formula.			
Digitalis, No. 50 powder, . .	1	Perc.	4 ℥	1,920 grs.	1	1
Diluted Alcohol, sufficient to make, ...	7		2 *O*	13,696 "	7.13	7

¶ No change recommended.

***Tinctura Erythroxyli.** *Tincture of Coca.*

	New Formula.	
Coca, No. 50 powder, ...	1	Perc.
Diluted Alcohol, sufficient to make, ...	5	

¶ The tincture of this valuable drug will probably be more used than any other preparation, and the above formula is submitted.

***Tinctura Eucalypti.** *Tincture of Eucalyptus.*

	New Formula.	
Eucalyptus, No. 50 powder, .	1	Perc.
Alcohol, ...	5	

¶ Although the oils from the Eucalyptus have been the favorite form of administering the active principles present, it is believed that the tincture made as proposed will not cause, in moderate doses, the disagreeable eructations that usually follow the administration of the oil in capsule form, or in emulsions; in addition to this, the presence of the resins which have been shown to exist in Eucalyptus, probably have an important medicinal effect, and, therefore, the tincture made with an alcoholic menstruum will be a more thorough representative of the drug than the oil prepared by distillation. Although diluted alcohol in larger quantity proportionately might have exhausted the drug, in this case it is deemed better to make a stronger tincture and keep the dose smaller, as its taste is not agreeable.

[In view of the difficulty of getting Eucalyptus leaves into a condition permitting their reduction to powder, without loss of volatile oil, it would seem to be preferable to prepare the tincture by macerating the cut and bruised leaves with alcohol for 7 days, then straining, expressing, and gradually washing with alcohol, until 5 parts of the tincture are obtained from 1 part of the drug. This tincture, as well as some others, could, in a well appointed laboratory, be best prepared by digesting the cut leaves with alcohol in a large flask or other suitable vessel, standing on a water-bath and provided with an upright cooler. This process consumes but a short time, and completely exhausts the drug. Yet it is doubtful whether such a process should be recognized by the pharmacopœia.]

Tinctura Ferri Chloridi. *Tincture of Chloride of Iron.*

New Formula.			Old Formula.			
Solution of Chloride of Iron,	7	Sol.	8 fl. ℥	4,940 grs.	1	7
Alcohol,	13		24 fl. ℥	9,132 "	1.85	13

¶ No change recommended in this preparation.

Tinctura Gallæ (*a*). *Tincture of Nutgall.*

		Old Formula.	
Nutgall, No. 50 powder,	4 ℥	1,920 grs.	1
Diluted Alcohol, sufficient to make,	2 *O*	13,696 "	7.13

¶ This tincture could well be made stronger and then be uniform with the tincture officinal in the French and German pharmacopœias, and precipitation retarded by addition of glycerin, as follows:

Tinctura Gallæ (*b*). *Tincture of Nutgall.*

New Formula.		
Nutgall, No. 50 powder,	2	Perc.
Glycerin,	1	
Diluted Alcohol, sufficient to make,	10	

*** Tinctura Gelsemii.** *Tincture of Yellow Jasmine.*

New Formula.		
Yellow Jasmine, No. 60 powder,	1	Perc.
Diluted Alcohol,	5	

¶ This belonging to the dangerous class of tinctures, it was deemed best to make it of the same strength as colchicum, digitalis, belladonna, etc., especially as with this menstruum the quantities seem to be well adjusted.

Tinctura Gentianæ Composita. *Compound Tincture of Gentian.*

New Formula.				Old Formula.			
Gentian,	No. 50 powder,	4	Perc.	2 ℥	960 grs.	4	4
Bitter Orange Peel,		2		1 ℥	480 "	2	1
Cardamon,		1		½ ℥	240 "	1	1
Diluted Alcohol, sufficient to make,		50		2 *O*	13,696 "	57.6	50

¶ The same recommendation is made with this tincture, namely to have all of the drugs mixed, before being contused and powdered together. A slight increase in strength is suggested, in order to round off the parts.

***Tinctura Grindeliæ.** *Tincture of Grindelia.*

	New Formula.
Grindelia, No. 20 powder, . .	1 Mac. &
Alcohol, sufficient to make, .	5 Perc.

¶ Owing to the large quantity of oleoresinous substance coating the drug, it is difficult to powder it. It may be, however, macerated for 24 hours with two parts of menstruum, this poured off and reserved, the drug then drained and dried, when it may be readily powdered. Now, if the powdered drug is placed in a percolator the macerate may be first added, followed by sufficient alcohol to make the finished product weigh five parts. [If both *Grindelia robusta* and *G. squarrosa* are introduced into the U. S. Ph., it would be necessary to qualify the title of this tincture by the corresponding Species name.]

Tinctura Guaiaci. *Tincture of Guaiac.*

	New Formula.		Old Formula.		
Guaiac, No. 20 powder, . . .	1 Mac.	℥ 6	2,880 grs.	1	1
Alcohol, sufficient to make, . .	5	*O* 2	12,046 "	4.18	5

¶ Although the U. S. Pharmacopœia of 1870 recommends percolation as the proper process for this preparation, the experience of the writer is against it as there directed to be carried out. It is almost impossible to prevent stratification in packing the mixture of sand and guaiac resin which vary considerably in specific gravity; the tendency of the sand being to fall, and the guaiac resin to rise in the process of packing. To this is added the reasonable likelihood of the strong solution of guaiac resin becoming so thick before it is permitted to drop into the receiving bottle, that it will not percolate at all. Maceration here is plainly indicated, particularly as the resin is almost entirely soluble in alcohol.

Tinctura Guaiaci Ammoniata. *Ammoniated Tincture of Guaiac.*

	New Formula.		Old Formula.		
Guaiac, No. 20 powder, . .	1 Mac.	℥ 6	2,880 grs.	1	1
Aromatic Spirit of Ammonia, sufficient to make, . . .	5	*O* 2	12,672 "	4.4	5

¶ To be made by maceration.

***Tinctura Guaranæ.** *Tincture of Guarana.*

	New Formula.
Guarana, No. 50 powder, . .	1 Perc.
Alcohol, sufficient to make, .	5

¶ This formula produces an agreeable preparation, and will doubtless be a favorite mode of exhibiting the drug.

Tinctura Hellebori. *Tincture of Black Hellebore.*

	New Formula.		Old Formula.		
Black Hellebore, No. 50 powder,	1 Perc.	℥ 4	1,920 grs.	1	1
Diluted Alcohol, sufficient to make, ...	7	*O* 2	13,696 "	7.13	7

¶ No change recommended.

Tinctura Humuli. *Tincture of Hops.*

	New Formula.			Old Formula.			
Hops, well dried, No. 20 powder,	1	Perc.	5 ℥	2,4000 grs.	1	1
Diluted Alcohol, sufficient to make,	5		2 *O*	13,696 "	5.7	5

¶ A preparation which might well be dispensed with in the writer's opinion. It is difficult to exhaust with the quantity of menstruum adopted by the U. S. Pharmacopœia of 1870, and if the quantity of menstruum were increased, the dose would be too large for practical purposes; the amount of alcohol in the dose neutralizing the benefit derived from the hops when used as a narcotic, for which purpose it is principally employed. The British preparation is weaker, but made with a similar menstruum.

*** Tinctura Hydrastis.** *Tincture of Hydrastis.*

	New Formula.	
Hydrastis, No. 50 powder.	1	Perc.
Diluted Alcohol, sufficient to make,	5	

¶ Suggested as a useful preparation of an indigenous remedy largely used in the West and South.

inctura Hyoscyami. *Tincture of Hyoscyamus.*

	New Formula.			Old Formula.		
Hyoscyamus Leaves, No. 50 powder,	1	Perc.	4 ℥	1,920 grs.	1	1
Diluted Alcohol, sufficient to make,	7		2 *O*	13,696 "	7.13	7

¶ No change recommended.

Tinctura Iodinii. *Tincture of Iodine.*

	New Formula.			Old Formula.		
Iodine,	1	Sol.	1 ℥	480 grs.	1	1
Alcohol,	10		1 *O*	6,023 "	12.5	10

¶ There would seem to be no good reason why this tincture (or, more properly, solution) could not be brought into line with the class of tinctures which are made in the proportion of 1 to 10, and thus made uniform with the preparation officinal in the German pharmacopœia. This would probably make a saturated solution which would be a good starting point, easily borne in mind, and convenient if further dilution was necessary.

Tinctura Iodinii Composita. *Compound Tincture of Iodine.*

	New Formula.			Old Formula.		
Iodine,	2	Sol.	½ ℥	240 grs.	1	2
Iodide of Potassium,	4		1 ℥	480 "	2	4
Alcohol,	50		1 *O*	6,023 "	25	50

¶ The necessity for this preparation, in the writer's opinion, is not apparent; it is one-half the strength in iodine of the simple tincture, and possesses greater solubility in water and aqueous mixtures than the simple tincture, but its place is probably much better filled by the well-known aqueous solution *Liquor Iodinii Compositus*. This solution is somewhat stronger, and mixes in all proportions with water, so that it may be readily diluted, and the dropping of the *Tinctura* Iodinii Composita would end the confusion which has arisen so frequently, owing to having two preparations so nearly alike in appearance and physical properties. This plan would leave two well-marked and clearly defined solutions of iodine—one, the simple tincture made 1 to 10 with alcohol, and intended exclusively for external application; the other, a compound aqueous solution for internal use, and which is capable of indefinite dilution with water without precipitation.

Tinctura Jalapæ. *Tincture of Jalap.*

	New Formula.		Old Formula.			
Jalap, No. 50 powder, . . .	1	Perc.	6 ℥	2,880 grs.	1	1
Alcohol,) mixed in the propor-	3		21⅓ fl. ℥	8,030 "	2.78	3
Water,) tion of	2		10⅔ fl. ℥	4,860 "	1.69	2
to make	5					

¶ A tincture rarely used, but unquestionably more permanent and effective if the alcoholic strength of the U. S. Pharmacopœia of 1870 is adopted. The British formula requires diluted alcohol, but no great loss would follow if this preparation were dropped entirely from both Pharmacopœias.

Tinctura Kino (*a*). *Tincture of Kino.*

	Old Formula.			
Kino, ...	6 ℥	360 grs.	1	1
Alcohol, . . .	5⅓ fl. ℥	2,207 "	6.13	7
Water, ...	2⅔ fl. ℥	1,214 "	3.38	3

¶ The present officinal preparation, when finished, seems to be satisfactory; but when first made has the disadvantage of occasionally becoming gelatinous. Prof. Diehl states that, if care is taken to observe strictly the pharmacopœial mixture of alcohol and water, he has not observed it to gelatinize, and he recommends powdering the kino quite fine, triturating with the mixture of alcohol and water just as is usual in making solutions extemporaneously, shaking the whole mixture vigorously for half an hour, and filtering. The writer's experience does not exactly coincide with that of Prof. Diehl, for this tincture made with officinal menstruum will gelatinize if kept a sufficient length of time exposed, as such a preparation would be likely to be, only used occasionally as it is called for, and remaining in the shop bottle on the shelf. The process recommended by P. F. Smith (see *U. S. Dispensatory*, 13th edition, p. 1467) has never failed in the writer's hands to produce a tincture which would always remain fluid. This was modified, however, by the substitution of the officinal menstruum for the diluted alcohol. The objection to the process is the introduction of the ground logwood which, whilst harmless as a medicinal agent in the quantity mentioned, would be criticised as savoring of empiricism, and should not be adopted except as a *dernier ressort*. The plan of Fox (*Am. Jour. Pharm.*, June, 1877) has yielded satisfactory results. His modification is a menstruum of four measures of alcohol, one of water, one of glycerin, and in your reporter's opinion is the best, and the following process is therefore recommended.

Tinctura Kino (*b*). *Tincture of Kino.*

	New Formula.
Kino,	2
Alcohol, Water, Glycerin, mixed in the proportion of	12 3 3
to make,	20

Rub the Kino to a powder in a mortar, and add from time to time portions of the menstruum of Alcohol, Water, and Glycerin, until a perfectly smooth, thin paste is made; transfer this to a bottle, add the rest of menstruum and shake occasionally for 24 hours, then filter, pass enough menstruum through the filter to obtain 20 *parts*, and preserve in well-stopped bottles.

Tinctura Krameriæ. *Tincture of Krameria.*

	New Formula.			Old Formula.			
Rhatany, No. 50 powder,	1	Perc.	6 ʒ	2,880 grs.	1	1
Diluted Alcohol, sufficient to make,	5		2 O	13,696 "	4.8	5

¶ No change recommended.

Tinctura Lobeliæ. *Tincture of Lobelia.*

	New Formula.			Old Formula.		
Lobelia, No. 50 powder,	1	Perc.	4 ʒ	1,920 grs.	1	1
Diluted Alcohol, sufficient to make,	5		2 O	13,696 "	7.13	5

¶ There is no good reason why this tincture could not be brought into the class 1 in 5, as it yields its virtues readily to the menstruum, and it would then be of the same strength as the French preparation. An ethereal tincture of lobelia might be introduced, but it is rarely used in the writer's locality.

Tinctura Lupulinæ. *Tincture of Lupulin.*

	New Formula.			Old Formula.		
Lupulin,	1	Perc.	4 ʒ	1,920 grs.	1	1
Alcohol, sufficient to make,	5		2 O	12,046 "	6.3	5

¶ Recommended for a place in the class 1 in 5. It is hardly used enough to warrant the change advocated by some writers, of substituting aromatic spirit of ammonia for alcohol.

Tinctura Myrrhæ (*a*). *Tincture of Myrrh.*

	Old Formula.		
Myrrh, No. 40 powder,	3 ʒ	1,440 grs.	1
Alcohol, sufficient to make,	2 O	12,046 "	8.4

¶ Whilst our Pharmacopœia of 1870 recommends percolation for this preparation, and it is quite possible to obtain good results from percolation, your reporter believes that a better preparation and one more uniform all over the country could be made by resorting to maceration. The difficulty of making a homogeneous powder adapted for percolation, if the myrrh is in good fresh condition, is a prominent objection, and, of course, the steam-dried, dusted powder of the shops should never be used in preparing the tincture, as it has lost a large proportion of its activity through the evaporation of the volatile oil. In view of these points the following formula is suggested.

Tinctura Myrrhæ (*b*). *Tincture of Myrrh.*

	New Formula.	
Myrrh, No. 40 powder, . .	1	Mac.
Alcohol, sufficient to make, .	5	

Macerate 7 days.

Tinctura Nucis Vomicæ (*a*). *Tincture of Nux Vomica.*

	Old Formula.		
Nux Vomica, No. 60 powder, .	8 ʒ	3,840 grs.	1
Alcohol, sufficient to make, .	2 *O*	12,046 "	3.14

¶ This valuable preparation seems to be gaining in popularity and usefulness, particularly in large cities and towns where nervous affections, and those needing powerful tonics, are prevalent. The principal practical objection to its employment by most medical practitioners is the uncertainty in its strength. This may arise from several causes: 1. from the lack of care in having the drug *in fine powder*. This is of great importance in this preparation, on account of the very hard and intractable nature of the structure of nux vomica seeds. 2. From neglecting to strictly carry out the digesting process recommended by the Pharmacopœia of 1870. 3. From percolating too rapidly. Nux vomica is a difficult drug to exhaust thoroughly, and a very effective preparation may be made if the formula is strictly carried out. It is believed, however, by the writer that a better and more uniform preparation would be produced by making the strength 1 in 5, and by directing a previous maceration for 48 hours, the orifice of the percolator being closed when the percolate begins to drop. This would give more menstruum to exhaust a given quantity of drug, and there would seem to be no grave objection to this, when it is considered that the dose is very small, and the slight increase in the quantity of alcohol would be too trifling to be objectionable.

Tinctura Nucis Vomicæ (*b*). *Tincture of Nux Vomica.*

	New Formula.	
Nux Vomica, No. 60 powder, .	1	Perc.
Alcohol, sufficient to make, .	5	

Moisten the powder, pack it firmly in a cylindrical percolator, pour on sufficient menstruum to cause the percolate to drop, then close the orifice of the percolator with a cork and allow it to stand forty-eight hours. Now remove the stopper and obtain five parts of percolate.

¶ [Nux Vomica, like Eucalyptus (see above under *Tinct. Eucalypti*), may be readily exhausted by using digestion in an apparatus provided with an upright cooler. Another method, which, in practice, would probably yield more uniform methods, in the hands of the average operator, than percolation of the powder on a small scale, would be, to make this tincture from the dried alcoholic extract. Of course, this would make it desirable to introduce some process of assay, in order to afford a criterion as to the quality of

the commercial extract. Yet, as it is not always certain whether the pharmacist would obtain a reliable extract in the market—although there *are* excellent extracts of Nux Vomica of tolerably uniform strength—it seems that the following modification of the process would yield good and uniform results. The formula is based on the assumption, which is believed to be correct, that Nux Vomica yields on an average 10% of dry extract.

Tinctura Nucis Vomicæ (*c*). *Tincture of Nux Vomica.*

	New Formula.
Nux Vomica, in No, 60 powder,	1 Perc.
Alcohol, a sufficient quantity,	q. s.

Moisten the powder, pack it firmly in a conical percolator, pour on sufficient Alcohol to cause the percolate to drop, then close the orifice of the percolator with a cork, and allow to stand for 48 hours. Now remove the stopper and percolate with Alcohol until the Nux Vomica is exhausted, or nearly so. Subject the tincture to distillation, on a water-bath, until the residue weighs *four parts;* evaporate a small weighed portion of this residue to dryness and constant weight, in order to ascertain the quantity of dry extract contained in the remaining tincture; and finally add *enough* Alcohol to the latter, so that *one hundred parts* of it may contain *two parts* of dry extract.

Tinctura Opii (*a*). *Tincture of Opium.*

			Old Formula.	
Opium, in No. 50 powder, . .	Mac.	2½ ℥	1,200 grs.	1
Water, ...	&	1 *O*	7,277 "	6
Alcohol, ...	Perc.	1 *O*	6,023 "	5

¶ The present officinal process is not usually followed by those who make this most valuable of all the tinctures, particularly in the manner of extracting the active principles of the opium. That the present process, if faithfully carried out, produces good results cannot be denied, but it is believed that the six days' maceration, as there directed, three days with water and three in contact with alcohol, is an unnecessary waste of time. There seems to be no good reason why the first maceration with water should not be done with *hot* water, which has the property of softening the hard lumps and greatly assisting in their disintegration, and then twelve hours' time will easily suffice to form a smooth mixture in which all of the principles soluble in water will be retained in the solution. There are some reasons, which are quite important, for diminishing the quantity of alcohol in laudanum. Therapeutically the alcohol is not wanted, although the quantity is small, when taken in ordinary doses. But since narcotina, which is believed to be the nauseating principle, is soluble in 100 parts of cold alcohol, and almost entirely insoluble in water, a reduction in the quantity of alcohol would be indicated. Pharmaceutically, the advantages of having the tincture remain hydro-alcoholic require consideration. It is frequently used in liniments which are alcoholic, and sometimes contain considerable quantities of volatile oils, and the proposition would doubtless be made to keep laudanum of the present alcoholic strength and retain it principally for external use, and use the deodorized tincture internally. In view of these points the following modification is proposed.

Tinctura Opii (*b*). *Tincture of Opium.*

	New Formula.	
Opium, in No. 20 powder, . .	1	Mac.
Water, a sufficient quantity,	q. s.	&
Alcohol, a sufficient quantity,	q. s.	Perc.
to make, ...	10	

Triturate the powdered Opium in a mortar with *four parts* of water at 90° C. (=194° F.) until a smooth mixture is produced, allow it to stand twelve hours, then add *four parts* of Alcohol, transfer the mixture at once to a percolator arranged for percolation, and return the first portion of percolate until it becomes clear. When it ceases to drop, add a mixture of *one part* of Water and *one part* of Alcohol, and sufficient additional menstruum of the same alcoholic strength, to make the final percolate weigh *ten parts*.

¶ [This would, at the same time, make the tincture of the strength recommended for the opium preparations under Acetum Opii.]

Tinctura Opii Acetata. *Acetated Tincture of Opium.*

		Old Formula.		
Opium, No. 50 powder, . .	Mac.	2 ℥	960 grs.	1
Distilled Vinegar, ...		12 fl. ℥	5,469 "	5
Alcohol, ...		8 fl. ℥	3,012 "	3

¶ This preparation which *had* a local reputation at one time, has deservedly fallen into disuse, even in the locality in which it originated, and in the writer's opinion should not have a place in our next Pharmacopœia. [If it is retained, the distilled vinegar should be replaced by diluted acetic acid.]

Tinctura Opii Camphorata (*a*). *Camphorated Tincture of Opium.*

		Old Formula.		
Opium, No. 50 powder, . .	Mac.	60 grs.	60 grs.	4
Benzoic Acid, ...		60 "	60 "	4
Camphor, ...		40 "	40 "	3
Oil of Anise, ...		50 "	50 "	3
Clarified Honey, ...		960 "	960 "	60
Diluted Alcohol, ...		2 *O*	13,696 "	900

¶ The long maceration of seven days is certainly unnecessary in this preparation; the great excess of menstruum here leaves no possible room for doubt of thorough exhaustion. If some modification in the manipulation is made, the following is proposed.

Tinctura Opii Camphorata (*b*). *Camphorated Tincture of Opium.*

	New Formula.	
Opium, No. 20 powder, . .	1	Mac.
Benzoic Acid, ...	1	
Camphor, ...	1	
Oil of Anise, ...	1	
Sugar, ...	10	
Water, at 90° C. (=194° F.), .	5	
Diluted Alcohol, sufficient to make, ...	200	

Rub the powdered Opium and Sugar with the Water at a temperature of 90° C. (= 194° F.), added gradually until smooth. Dissolve the Benzoic Acid, Camphor, and Oil of Anise in *one hundred and seventy-five parts* of Diluted Alcohol and mix all together. Macerate for twelve hours, filter, and add sufficient Diluted Alcohol to make the whole weigh *two hundred parts.*

[As stated above, under Tinctura Cardamomi Co., glycerin is an excellent substitute for the honey heretofore used in this preparation. It imparts to the tincture the same agreeable sweetness which good honey does; it may always be had of good quality, and it *does not* irritate the stomach even of the most delicate infant. In accordance with the recommendation given under Acetum Opii, it is advised to make this preparation of the strength: 1 in 250. At present the strength is 1 gr. in about 256 minims; these latter weigh between 230 and 240 grains; and, owing to the common domestic use of this preparation, particulary for children, its strength should not be increased. The formula would therefore be:

Tinctura Opii Camphorata (*c*). *Camphorated Tincture of Opium.*]

	New Formula.	
Opium, No. 50 powder, . .	1	Mac.
Benzoic Acid, ...	1	
Camphor, ...	1	
Oil of Anise, ...	1	
Glycerin, ...	10	
Diluted Alcohol, sufficient to make, ...	250	

Tinctura Opii Deodorata (*a*). *Deodorized Tincture of Opium.*

		Old Formula.		
Opium, No. 50 powder, . .	Mac.	℥2½ ʒ3	1,200 grs.	1 1
Ether, ...	etc.	8 fl. ʒ3	2,734 "	2¼ 2
Alcohol, ...		8 fl. ʒ3	3,012 "	2½ 2
Water, ...		24 fl. ʒ3	10,936 "	9¼ 8

¶ The manipulations recommended by Davis, by which the time required in making this preparation is said to be shortened, is not recommended by your reporter. He uses boiling hot water for exhausting the opium, expresses the residue, evaporates, treats with alcohol to precipitate gum, pectin, and other inert substances taken up by the hot water, filters, and washes precipitate with alcohol, distils off the alcohol, evaporates to proper consistence, then deodorizes with ether or by the process of the present Pharmacopœia. Few will admit that this simplifies the Pharmacopœia process, whilst it undoubtedly adds to the expense. The modification recommended by Ebert, that of substituting benzin for ether in the deodorizing process, although good from an economical point of view, has this disadvantage that, whilst depriving the opium of its peculiar odor, it is very apt to substitute an odor of its own which is far more objectionable; and the ability of benzin to take the place of ether as a solvent for the objectionable matters needs further investigation. The results obtained by the Pharmacopœia process of 1870 have certainly been gratifying. The following is proposed as the new formula.

Tinctura Opii Deodorata (*b*). *Deodorized Tincture of Opium.*

	New Formula.	
Opium, No. 50 powder, . .	1	Mac.
Ether, ...	2	etc.
Alcohol, ...	2	
Water, sufficient to make, . .	10	

Rub the powdered Opium in a mortar with *four parts* of Water gradually added until thorough softened, then set aside for twelve hours, express, and repeat the operation twice with the same quantity of Water. Mix the expressed liquids, and, having evaporated the mixture to *two parts*, allow it to cool, and shake it in a bottle repeatedly with the Ether. Pour off the ethereal solution, when it has separated by standing, and evaporate the remaining liquid until all traces of Ether have disappeared. Mix the residue with *five parts* of Water and filter the mixture through paper. When the liquid has ceased to pass, add enough Water, through the filter, to make the filtered liquid weigh *eight parts*. Lastly add Alcohol *two parts*, and mix them together.

[* **Tinctura Persionis.** *Tincture of Cudbear.*

Cudbear, ...	1	Perc.
Diluted Alcohol, sufficient to make, ...	10	

¶ This is suggested as a coloring agent, particularly for acid liquids. Regarding the employment of coloring matters, compare remarks to *Syrupus Phosphatum Co.* Since cudbear is only a secondary and complex product, containing the coloring matters of certain lichens, it would not be proper to use the name of one of the latter as a title. One of the synomyms of cudbear, namely *Persio*, can be latinized without difficulty.]

* **Tinctura Pilocarpi.** *Tincture of Jaborandi.*

Jaborandi, No. 50 powder, .	1	Perc.
Diluted Alcohol, sufficient to make, ...	5	

¶ A convenient form for administering this valuable drug.

* **Tinctura Pyrethri.** *Tincture of Pellitory.*

Pellitory, No. 50 powder, . .	1	Perc.
Alcohol, sufficient to make, .	5	

¶ Recommended on account of its convenience in administering the drug, its more extended use in mouth washes, and as a local stimulant.

Tinctura Quassiæ. *Tincture of Quassia.*

	New Formula.			Old Formula.	
Quassia, No. 50 powder, . .	1	Mac.	2 ℥	960 grs.	1
Diluted Alcohol, sufficient to make, ...	10	& Perc.	2 *O*	13,696 "	15.2

¶ Maceration for 2 days, with subsequent percolation, is recommended here, on account of the slowness with which the drug yields *all* of its bitter principle to menstrua. It might be brought into the class 1 in 10. The French tincture 1 in 5 is believed to contain an insufficient quantity of menstruum to extract the virtues of the drug, and the bitterness would be excessive.

Tinctura Rhei *et Cardamomi. *Tincture of Rhubarb * and Cardamom.*

	New Formula.		Old Formula.		
Rhubarb, No. 40 powder,	6	Perc.	3 ℥	1,440 grs.	6
Cardamom, No. 50 powder,	1		½ ℥	240 "	1
Diluted Alcohol, sufficient to make,	50		2 *O*	13,696 "	57

¶ In view of the fact that compound tinctures are frequently used, and of the impropriety previously alluded to of directing important drugs to be used as adjuvants in officinal preparations without calling attention to the fact through the title, the writer proposes that the name of the Tincture of Rhubarb be corrected to Tinctura Rhei et Cardamomi, or that the cardamom be dropped. As the preparation is now largely used, it would probably be best to retain the cardamom.

*** Tinctura Rhei Aromatica.** *Aromatic Tincture of Rhubarb.*

	New Formula.		Old Formula.		
Rhubarb, No. 40 powder,	10	Perc.	2½ ℥	1,200 grs.	10
Cloves, }	2		½ ℥	240 "	2
Cinnamon, } No. 50 powder,	2		½ ℥	240 "	2
Nutmegs, }	1		120 grs.	120 "	1
Diluted Alcohol, sufficient to make,	50		1 *O*	6,848 "	50

¶ This is not a new preparation; it is the tincture so largely made for the active portion of the spiced syrup of rhubarb. The combination of aromatics is one of the best that can be devised, and the convenience to the pharmacist of having a tincture which can be made in quantity, and kept indefinitely, or converted by simple admixture into the officinal syrup, is apparent. To the physician it is no less convenient. He has an excellent liquid preparation of rhubarb, combined with aromatics, *without* the sugar, which is objectionable in some cases, and *with* the stimulating effects of the alcohol therein contained. If a weaker preparation is desired, dilution or combination with a medicated water is open to him. The strength of rhubarb proposed corresponds closely with the one recommended by the Pharmacopœia, under *Syrupus Rhei Aromaticus*, which is nearly 1 in 5.

*** Tinctura Rhei Dulcis.** *Sweet Tincture of Rhubarb.*

	New Formula.		Usual Unofficinal Formula.	
Rhubarb, No. 40 powder,	8	Perc.	1 ℥	480 grs.
Liquorice Root }	4		½ ℥	240 "
Anise, } No. 50 powder,	4		½ ℥	240 "
Cardamom, }	1		1 ʒ	60 "
Diluted Alcohol, sufficient to make,	100		1 *O*	6,848 "

¶ A preparation combining the purgative properties of rhubarb with the well-

known effect which liquorice possesses, of covering the taste of disagreeable remedies. It is similar to preparations recommended by Taylor, Jones, and other writers, and in some localities is largely used, and is valuable as an adjuvant to mixtures in children's diseases.

Tinctura Rhei et Sennæ. *Tincture of Rhubarb and Senna.*

Rhubarb,	Perc.	1 ℥
Senna,	No. 40 powder.	2 ℥
Coriander,		1 ℥
Fennel,		1 ℥
Extract of Liquorice,		½ ℥
Raisins, deprived of seeds, . .		6 ℥
Diluted Alcohol, sufficient to make, ...		3 *O*

¶ This relic of antiquity, and probably the best representative in the whole list of tinctures of polypharmacy, should have been termed Compound Tincture of Raisins, for, as will be seen, raisins outnumber rhubarb 6 to 1. It has doubtless been kept alive, and has had a place in the Pharmacopœia through "auld lang syne" associations, and the virtues possessed by raisins in alleviating "gout," were no doubt better understood by "Warner" than by therapeutists of the present day. Its place, in the writer's opinion, would be filled better through the use of the sweet tincture or aromatic tincture, to which senna may be added if such addition is desired.

Tinctura Sanguinariæ. *Tincture of Bloodroot.*

	New Formula.		Old Formula.		
Bloodroot, No. 50 powder, .	1	Perc.	4 ℥	1,920 grs.	1
Alcohol, } mixed in the propor-	5		24 fl. oz.	9,035 "	5
Water, } tion of	2		8 fl. oz.	3,646 "	2
to make, ...	7		2 *O*		

¶ A menstruum composed of 5 alcohol, 2 water is suggested, retaining the old proportions as nearly as possible.

Tinctura Scillæ. *Tincture of Squill.*

	New Formula.		Old Formula.			
Squill, No. 40 powder, . .	1	Mac. &	4 ℥	1,920 grs.	1	1
Diluted Alcohol, sufficient to make, ...	7	Perc.	2 *O*	13,696 "	7.33	7

¶ The quantity of diluted alcohol recommended in the formula is deemed insufficient to moisten the squill properly, and on account of its property of swelling so enormously, maceration and expression probably would produce better results here than percolation. If percolation is preferred, a preliminary soaking of twenty-four hours in 4 parts of menstruum is recommended.

Tinctura Serpentariæ. *Tincture of Serpentaria.*

	New Formula.		Old Formula.			
Serpentaria, No. 50 powder, .	1	Perc.	4 ℥	1,920 grs.	1	1
Diluted Alcohol, sufficient to make, ...	10		2 *O*	13,696 "	7.13	10

¶ Recommended to be made of the strength 1 in 10, as the increase in dose of alcohol would not be objectionable therapeutically, and the Fluid Extract is available if greater strength is needed.

Tinctura Stramonii. *Tincture of Stramonium.*

New Formula.			Old Formula.		
Stramonium Seed, No. 50 powder,	1	Perc.	4 ʒ	1,920 grs.	1
Diluted Alcohol, sufficient to make,	10		2 O	13,696 "	7.13

¶ No change recommended.

[* **Tinctura Sumbul.** *Tincture of Sumbul.*

Sumbul, No. 40 powder,	1	Perc.
Alcohol, sufficient to make,	10	

¶ In some sections of the country this tincture is in considerable demand.]

Tinctura Thujæ. *Tincture of Arbor Vitæ.*

Arbor Vitæ, No. 50 powder,	1	Perc.
Alcohol, sufficient to make,	5	

¶ Recommended as a good method for the administration of this drug, which is now coming into use.

[It is maintained by careful observers, and appears to be borne out by experience, that dried Arbor Vitæ is devoid of the medicinal properties, for which the *fresh* drug has acquired a reputation. Although chemistry can often detect no difference in the constituents of vegetable drugs, before and after drying, except the loss of moisture, and perhaps of a little volatile oil, yet there seems to be no doubt that in a number of cases a marked therapeutical difference exists between preparations made from the fresh and from the dried drugs. This is particularly asserted to be the case with Tincture of Arbor Vitæ. Hence it ought to be prepared in accordance with the general formula for *Tincturæ ex Herbis Recentibus*, which will be found at the end of the list of Tincturæ. Its proper title would then be *Tinctura Thujæ Recentis.*]

Tinctura Tolutana. *Tincture of Tolu.*

New Formula.			Old Formula.			
Balsam of Tolu,	1	Mac. &	3 ʒ	1,440 grs.	1	1
Alcohol, sufficient to make,	10	Filtr.	2 O	12,046 "	8.37	9

¶ To be prepared by maceration and filtration.

Tinctura Valerianæ. *Tincture of Valerian.*

New Formula.			Old Formula.		
Valerian, No. 50 powder,	1	Perc.	4 ʒ	1,920 grs.	1
Diluted Alcohol, sufficient to make,	5		2 O	13,696 "	7.13

¶ It is recommended to increase the strength somewhat and to diminish the dose, as alcohol is contraindicated, and the amount of menstruum is ample to exhaust the drug.

Tinctura Valerianæ Ammoniata. *Ammoniated Tincture of Valerian.*

	New Formula.		Old Formula.		
Valerian, No. 50 powder, . .	1	Perc.	4 ℥	1,920 grs.	1
Aromatic Spirit of Ammonia, .	5		2 *O*	12,672 "	6.7

¶ This tincture is recommended to be made by percolation in a glass percolator, and the strength is proposed to be the same as in the case of Tincture of Valerian.

*** Tinctura Vanillæ.** *Tincture of Vanilla.* " *Essence of Vanilla.*"

Vanilla, fine cut and bruised, .	1	Mac.
Sugar, ...	2	&
Water, } in the proportion of	3	Perc.
Alcohol, }	7	
to make, ...	10	

Macerate the cut and bruised Vanilla in half of the menstruum for twelve hours, then pour off the macerate, express the residue, then transfer it to a mortar, and beat it with the Sugar into a uniform powder. Pack this in a percolator, and having poured on the macerate, follow with the rest of the menstruum. Obtain ten parts of tincture.

Tinctura Veratri Viridis. *Tincture of American Hellebore.*

		Old Formula.			
American Hellebore, No. 50 powder, ...	Perc.	16 ℥	7,680 grs.	1	63 63
Alcohol, sufficient to make, .		2 *O*	12,046 "	1.57	94.2 100

¶ All of the useful purposes of a preparation of this strength are better carried out by a Fluid Extract, and it is, therefore, proposed to drop this tincture. [Nevertheless, if the tincture is to be retained, it should be made of the strength of 2 in 3, this being the nearest approach to the present strength.]

Tinctura Zingiberis. *Tincture of Ginger.*

	New Formula.		Old Formula.			
Ginger, No. 60 powder, . .	1	Perc.	8 ℥	3,840 grs.	1	1
Alcohol, sufficient to make, .	5		2 *O*	12,046 "	3.14	5

¶ As there is an officinal Fluid Extract of Ginger, it is believed that it would be better to make more of a difference than now exists, between it and the tincture, and to bring this into the class 1 in 5. Whilst decreasing the strength somewhat, it would still be a very powerful stimulant.

Tincturæ ex Herbis Recentibus. *Tinctures from Fresh Plants.*

¶ There seems to be a growing demand among physicians for certain tinctures

prepared from fresh plants. Some of the latter are of such a nature that effective preparations cannot well be prepared from the dried plants, because during the drying, some active volatile substances may be lost, or some other constituent be altered or destroyed. In the case of others, no tangible chemical or physical cause can be adduced for the preference given to preparations made from fresh material, except the statements of medical practitioners as to its therapeutic effect. While the propriety of recognizing these preparations in the U. S. Ph. is a question to be decided rather by the medical profession, it will be sufficient to suggest a formula by which these tinctures may be prepared uniformly. It is proposed to employ the proportions most usually followed, namely, 1 part of the fresh drug and 2 parts of alcohol, the amount of moisture in the drug reducing the latter more or less in each case. Should the title above suggested for these tinctures be considered too lengthy, they might be called *Alcoholaturæ*, as in the French Codex, where they are directed to be prepared from equal parts of the *juice*, and 90% alcohol, being, therefore, a concentrated kind of "Succus." The general formula suggested is the following, in which the dots (. . . .) are to be replaced by the name (in the *genitive*) of the respective plant, f. i. *Tinctura Thujæ Recentis*, Tincture of Fresh Arbor Vitæ, etc:

Tinctura . . . . Recentis. *Tincture of Fresh . . . .*

Take of	Fresh. . . ., cut and bruised, *one part*	1
	Alcohol ("Strong. Alcohol"), *two parts*	2

Macerate the cut and bruised . . . . with the Alcohol for seven days, frequently agitating. Then express the tincture, and filter it through paper.

Tormentilla (*d*). — **Toxicodendron** (fresh). — **Tragacantha.** — * **Trimethylamiæ Hydrochloras** (?). — **Triosteum** (*d*). — **Triticum.** — * **Triticum Repens.** — * **Trituratio[nes]** (see *Elaterium*).

Trochisci. *Troches.*

¶ In giving the equivalents of the weight of active constituents in each troche, approximate figures were used, where a slight difference of dose is of no importance. For instance, under Trochisci Magnesiæ, each troche is to contain 3 grains of magnesia, which has been expressed by 0.20 gm. instead of by 0.19. Wherever active drugs enter into the composition of the troche, the nearest actual equivalent in centigrammes is given.

Trochisci Acidi Tannici. *Troches of Tannic Acid.*

Take of	Tannic Acid, *four parts*	4
	Sugar, in fine powder, *forty parts*	40
	Tragacanth, in fine powder, *one part*	1
	Orange Flower Water, *a sufficient quantity* . . .	q. s.

Rub the powders together until they are thoroughly mixed; then with the Orange Flower Water form a mass to be divided into troches, so that each will contain 6 centigrammes (0.06 gm.) or 1 grain of Tannic Acid.

Substituting *gramme* for *part*, the mass will make 60 troches.
Substituting *drachm* for *part*, the mass will make 240 troches.

Trochisci Cretæ. *Troches of Chalk.*

Take of	Prepared Chalk, *thirty-two parts*	32
	Gum Arabic, in fine powder, *eight parts*	8
	Nutmeg, in fine powder, *one part*	1
	Sugar, in fine powder, *forty-eight parts*	48

Rub them together until they are thoroughly mixed; then form a mass **with** water, to be divided into troches, so that each will contain 26 centi**grammes** (0.26 gm.), or 4 grains of chalk.

Substituting *gramme* for *part*, the mass will make 124 troches.
Substituting *scruple* for *part*, the mass will make 160 troches.

Trochisci Cubebæ. *Troches of Cubebs.*

Take of	Oleoresin of Cubebs, *four parts*	4
	Oil of Sassafras, *one part*	1
	Liquorice, in fine powder, *thirty-six parts*	36
	Gum Arabic, in fine powder, *eighteen parts*	18
	Sugar, in fine powder, *twenty-seven parts*	27
	Syrup of Tolu, *a sufficient quantity*	q. s.

Rub the powders together until they are thoroughly mixed; then add the Oleoresin and Oil, and incorporate them with the mixture. Lastly, with Syrup of Tolu form a mass, to be divided into troches, so that each will contain 3 centigrammes (0.03 gm.) or ½ grain of Oleoresin of Cubebs.

Substituting *gramme* for *part*, the mass will make 124 troches.
Substituting *scruple* for *part*, the mass will make 160 troches.

¶ The relation of *scruple* to *gramme* is preserved by the figures 160 and 124, which is a slightly different relation from that between 3 centigrammes and ½ grain. But in this and other formulæ only the nearest approximations were aimed at.

Trochisci Ferri Subcarbonatis. *Troches of Subcarbonate of Iron.*

Take of	Subcarbonate of Iron, *eighty parts*	80
	Vanilla, *one part*	1
	Sugar, in fine powder, *two hundred and forty parts*	240
	Mucilage of Tragacanth, *a sufficient quantity*	q. s.

Rub the Vanilla, cut into fine slices, first with a portion of the Sugar into a uniform powder, and afterwards with the Subcarbonate of Iron and the remainder of the Sugar until they are thoroughly mixed. Then with Mucilage of Tragacanth form a mass, to be divided into troches, so that each will contain 32 centigrammes (0.32 gm.) or 5 grains of the Subcarbonate.

Substituting *gramme* for *part*, the mass will make 250 troches.
Substituting *scruple* for *part*, the mass will make 320 troches.

Trochisci Glycyrrhizæ et Opii. *Troches of Liquorice and Opium.*

Take of	Extract of Opium, dried and in fine powder, *two parts* .	2
	Liquorice, in fine powder, *eighty parts*	80
	Gum Arabic, in fine powder, *forty parts*	40
	Sugar, in fine powder, *one hundred and twenty parts* .	120
	Oil of Anise, *one part*	1

Rub the powders together until they are thoroughly mixed; then add the Oil of Anise, and incorporate it with the mixture. Lastly form a mass with water, to be divided into troches, so that each will contain 3 milligrammes (0.003 gm.) or $\frac{1}{20}$ grain of Extract of Opium.

Substituting *decigramme* for *part*, the mass will make 66 troches.
Substituting *grain* for *part*, the mass will make 40 troches.

Trochisci Ipecacuanhæ. *Troches of Ipecacuanha.*

Take of	Ipecacuanha, in fine powder, *one part*	1
	Tragacanth, in fine powder, *one part*	1
	Arrow Root, in fine powder, *eight parts*	8
	Sugar, in fine powder, *thirty-two parts*	32
	Syrup of Orange Peel, *a sufficient quantity* . . .	q. s.

Rub the powders together until they are thoroughly mixed; then with Syrup of Orange form a mass, to be divided into troches, so that each will contain 16 milligrammes (0.016 gm.), or $\frac{1}{4}$ grain of Ipecacuanha.

Substituting *gramme* for *part*, the mass will make 62 troches.
Substituting *scruple* for *part*, the mass will make 80 troches.

Trochisci Magnesiæ. *Troches of Magnesia.*

Take of	Magnesia, *twenty-four parts*	24
	Nutmeg, in fine powder, *one part*	1
	Sugar, in fine powder, *seventy-two parts*	72
	Mucilage of Tragacanth, *a sufficient quantity* . . .	q. s.

Rub the Magnesia and the powders together until they are thoroughly mixed; then with Mucilage of Tragacanth form a mass, to be divided into troches, so that each will contain 20 centigrammes (0.20 gm.) or 3 grains of Magnesia.

Substituting *gramme* for *part*, the mass will make 120 troches.
Substituting *scruple* for *part*, the mass will make 160 troches.

Trochisci Menthæ Piperitæ. *Troches of Peppermint.*

Take of	Oil of Peppermint, *one part*	1
	Sugar, in fine powder, *one hundred and twenty-five parts*	125
	Mucilage of Tragacanth, *a sufficient quantity* . . .	q. s.

Rub the Oil of Peppermint and the Sugar together until they are thoroughly mixed; then with Mucilage of Tragacanth form a mass, to be divided into troches, so that each will contain 7 milligrammes (0.007 gm.) or $\frac{1}{10}$ grain of Oil of Peppermint.

Substituting *gramme* for *part*, the mass will make 150 troches.
Substituting *scruple* for *part*, the mass will make 200 troches.

¶ According to the present U. S. Ph., each troche contains 5-48ths grain of Oil of Peppermint.

Trochisci Morphiæ et Ipecacuanhæ. *Troches of Morphia and Ipecacuanha.*

Take of	Sulphate of Morphia, *two parts*	2
	Ipecacuanha, in fine powder, *seven parts*	7
	Sugar, in fine powder, *eight hundred parts*	800
	Oil of Gaultheria, *one part*	1
	Mucilage of Tragacanth, *a sufficient quantity*	q. s.

Rub the powders together until they are thoroughly mixed; then add the Oil of Gaultheria, and incorporate it with the mixture. Lastly, with Mucilage of Tragacanth form a mass, to be divided into troches, so that each will contain $1\frac{6}{10}$ milligrammes (0.0016 gm.) or $\frac{1}{40}$ grain of Sulphate of Morphia.

Substituting *decigramme* for *part*, the mass will make 125 troches.
Substituting *grain* for *part*, the mass will make 80 troches.

¶ The proportions of the present U. S. Ph. are: Sulphate of Morphia, 6; Ipecac, 20; Sugar, 2,400; Oil of Gaultheria, 3 parts. In reducing these figures, the quantity of Ipecac was increased to 21 parts, so as to be divisible by 3. In giving the amount of active constituents contained in each troche, it is only necessary to quote *one* of them, namely, the Sulphate of Morphia, for all the other constituents are taken in the proportions directed by the formula.

Trochisci Potassii Chloratis. *Troches of Chlorate of Potassium.*

Take of	Chlorate of Potassium, in fine powder, *eighty parts*	80
	Sugar, in fine powder, *two hundred and eighty-eight parts*	288
	Tragacanth, in fine powder, *thirty-two parts*	32
	Vanilla, *one part*	1

Rub the Vanilla, cut into thin slices, with a small quantity of the Sugar into a uniform powder, and mix this thoroughly with the remainder of the powders, avoiding trituration and pressure, to prevent the mixture from igniting or exploding. Then form a mass with water, to be divided into troches, so that each will contain 32 centigrammes (0.32 gm.) or 5 grains of Chlorate of Potassium.

Substituting *gramme* for *part*, the mass will make 250 troches.
Substituting *scruple* for *part*, the mass will make 320 troches.

¶ The present U. S. Ph. uses only the precautionary expression: "avoiding pressure." It would be preferable to adopt the wording given above, as it is more definite

and plain, particularly as troches are often made by persons unacquainted with pharmacy or chemistry.

Trochisci Santonini. *Troches of Santonin.*

Take of	Santonin, in fine powder, *one part*	1
	Sugar, in fine powder, *thirty-six parts*	36
	Tragacanth, in fine powder, *one part*	1
	Orange Flower Water, *a sufficient quantity*	q. s.

Rub the powders together until they are thoroughly mixed; then with Orange Flower Water form a mass, to be divided into troches, so that each will contain 3 centigrammes (0.03 gm.) or ½ grain of Santonin.

Substituting *gramme* for *part*, the mass will make 33 troches.
Substituting *scruple* for *part*, the mass will make 40 troches.

Trochisci Sodii Bicarbonatis. *Troches of Bicarbonate of Sodium.*

Take of	Bicarbonate of Sodium, *twenty-four parts*	24
	Sugar, in fine powder, *seventy-two parts*	72
	Nutmeg, in fine powder, *one part*	1
	Mucilage of Tragacanth, *a sufficient quantity*	q. s.

Rub the Bicarbonate of Sodium, Sugar, and Nutmeg together until they are thoroughly mixed; then with Mucilage of Tragacanth form a mass, to be divided into troches, so that each will contain 20 centigrammes (0.20 gm.) or 3 grains of Bicarbonate of Sodium.

Substituting *gramme* for *part*, the mass will make 120 troches.
Substituting *scruple* for *part*, the mass will make 160 troches.

Trochisci Zingiberis. *Troches of Ginger.*

Take of	Tincture of Ginger, *ten parts*	10
	Tragacanth, in fine powder, *three parts*	3
	Sugar, in fine powder, *one hundred and twenty parts*	120
	Syrup of Ginger, *a sufficient quantity*	q. s.

Mix the Tincture of Ginger with the Sugar, and having exposed the mixture to the air until dry, reduce it to fine powder; to this add the Tragacanth, and mix thoroughly. Lastly, with Syrup of Ginger form a mass, to be divided into troches, so that each will contain 10 centigrammes (0.10 gm.) or 1½ grains of Tincture of Ginger.

Substituting *gramme* for *part*, the mass will make 100 troches.
Substituting *scruple* for *part*, the mass will make 130 troches.

Ulmus.

Unguenta. *Ointments.*

¶ The formulæ for ointments have all been constructed so as to yield 100 parts.

Under Ung. Potass. Iodidi, the term "one-half part" has been retained for this reason. Ointment of Benzoin (or Benzoated Lard) has been substituted for simple lard where it seemed to be advantageous. In many ointments, where the proportions have heretofore been 1 of the active substance to 7 of lard or ointment, it would probably be an improvement to make the proportion 1 to 9 (or 1 in 10).

It might be well to add the following line to those formulæ where it would be appropriate: "This ointment should only be prepared when wanted for dispensing.

Unguentum.

¶ This has been changed back to *Unguentum Simplex* (see this).

Unguentum Acidi Carbolici. *Ointment of Carbolic Acid.*

Take of	Carbolic Acid, *ten parts*	10
	Simple Ointment, *ninety parts*	90

Mix them thoroughly.

¶ The present U. S. Ph. directs 1 part of carbolic acid and 7 parts of simple ointment. Prof. Stillé recommends a strength of 5%; but in our experience this strength is often exceeded, and 10% appears to be about the average, at least in form of ointment.

* Unguentum Acidi Chrysophanici. *Ointment of Chrysophanic Acid.*

Take of	Chrysophanic Acid, *ten parts*	10
	Paraffine Oil, *seventy parts*	70
	Yellow Wax, *thirty parts*	30

Add the Crysophanic Acid to the Paraffine Oil contained in a flask, and heat the mixture on a sand-bath to a temperature not exceeding 120° C. (=248° F.); then strain it through linen, with strong expression, into the Wax previously melted, and stir the mixture constantly while cooling.

¶ If this ointment is to be made officinal, it will be best to retain the above title, although the commercial "chrysophanic acid" is really no acid at all. An ointment of Goa-powder does not appear to deserve a formula in the U. S. Ph.—The term "paraffin oil" in the formula is explained below under the title *Unguentum Paraffini*. Lard or simple ointment may, of course, be used, instead of the paraffin oil and wax; but a mixture of the latter two substances forms an excellent body for the ointment.

Unguentum Acidi Tannici. *Ointment of Tannic Acid.*

Take of	Tannic Acid, *ten parts*	10
	Glycerin, *twenty parts*	20
	Lard, *seventy-four parts*	74

Rub the Tannic Acid with the Glycerin and afterwards with the Lard, gradually added, until they are thoroughly mixed, avoiding the use of an iron spatula.

¶ The U. S. Ph. directs 1 part of tannic acid to 16 parts of lard; this is about 6 per cent. The strength is recommended to be raised to 10%. The addition of glycerin is considered an improvement (*Hoffmann*).

*** Unguentum Aconitiæ.** *Aconitia Ointment.*

Take of	Aconitia, *two parts*	2
	Alcohol ("Stronger Alc."), *six parts*	6
	Ointment of Benzoin, *ninety-two parts*	92

Dissolve the Aconitia in the Alcohol; then incorporate the solution thoroughly with the Ointment of Benzoin by trituration.

¶ This is not unfrequently prescribed, and should therefore be defined in strength. The Brit. Ph. directs 1 part of aconitia, and about 4 parts of alcohol to 60 parts of lard. The above formula makes it 2%. Regarding *Aconitia*, see the latter on page 12.

Unguentum Antimonii. *Antimonial Ointment.*

Take of	Tartrate of Antimony and Potassium, in very fine powder, *twenty parts*	20
	Simple Ointment, *eighty parts*	80

Rub the Tartrate of Antimony and Potassium with the Simple Ointment, gradually added, until they are thoroughly mixed.

¶ If this ointment is to be retained, it is better made with simple ointment than with lard, as it is not so liable to melt so rapidly and run on surfaces where it is not wanted.

Unguentum Aquæ Rosæ. *Ointment of Rose Water.*

Take of	Expressed Oil of Almond, *fifty parts*	50
	Spermaceti, *sixteen parts*	16
	Rose Water, *twenty-five parts*	25
	Paraffin, *four parts*	4
	Glycerin, *four parts*	4
	Soap, in fine powder, *one part*	1

Melt together, by means of a water-bath, the Oil, Spermaceti, Paraffin, and Soap; then gradually add the Glycerin and Rose Water, and stir the mixture constantly until cool.

¶ The substitution of paraffin for white wax removes one of the chief causes of its liability to become rancid. The addition of a little soap, and replacement of some of the rose water by glycerin is believed to be an improvement. Instead of soap, borax may be used.

*** Unguentum Atropiæ.** *Ointment of Atropia.*

Take of	Atropia, *two parts*	2
	Alcohol ("Stronger Alcohol"), *six parts*	6
	Ointment of Benzoin, *ninety-two parts*	92

Dissolve the Atropia in the Alcohol; then incorporate the solution thoroughly with the Ointment of Benzoin by trituration.

¶ The strength of this preparation, according to the Br. Ph., is 1 part of atropia, about 4 parts of alcohol, and 60 parts of lard. The above formula makes it 2%.

Unguentum Belladonnæ. *Ointment of Belladonna.*

Take of	Alcoholic Extract of Belladonna, *ten parts*	10
	Diluted Alcohol, *six parts*	6
	Ointment of Benzoin, *eighty-four parts*	84

Rub the Extract with the Diluted Alcohol, until uniformly soft; then gradually add the Ointment of Benzoin, and thoroughly mix them.

¶ The common, watery extract of belladonna, which is directed by the present U. S. Ph., is of very uncertain strength. The alcoholic extract is decidedly more active. An ointment containing 10% of the latter would probably be strong enough. The strength of the present ointment is 12%. Dr. Hoffmann proposes to use 3 parts each of alcohol and glycerin, instead of the diluted alcohol.

Unguentum Benzoini. *Ointment of Benzoin. Benzoated Lard.*

Take of	Tincture of Benzoin, *ten parts*	10
	Lard, *ninety parts*	90

Melt the Lard by means of a water-bath, gradually add the Tincture of Benzoin, constantly stirring, and when the alcohol has evaporated, remove the ointment from the water-bath, and stir while cooling.

Present Formula.				Approximations.		
Tinct. Benzoin (spec. gr. 0.917) .	2 fl. ʒ	1.74	5.22	5	10	10
Lard	16 ʒ	16	48.	48	96	90

Ointment of benzoin or benzoated lard has been introduced into many ointments, instead of lard, for the purpose of retarding rancidity.

Unguentum Cantharidis. *Ointment of Cantharides.*

Take of	Cantharides, in coarse powder, *fourteen parts* . . .	14
	Olive Oil, *sixty-eight parts*	68
	Yellow Wax, *thirty-three parts*	33

Digest the Cantharides with the Olive Oil in a covered vessel, on a water-bath, for 12 hours; then place the vessel for 15 minutes in boiling water, strain through muslin, express forcibly, and add the product to the Wax previously melted. Finally stir the mixture constantly until it cools.

¶ The present U. S. Ph. prepares the *Ointment* of Canth. by mixing 1 part of *Cerate* of Canth. with 3 parts of Resin *Cerate*. Besides the incongruity of the name of "ointment" in this case, the product is not nearly as satisfactory as when prepared by the above formula, which is almost identical with that of the Br. and Germ. Pharm. The total quantity of olive oil and wax is 101 parts; some of the olive oil is retained by the muslin and cantharides, so that the product will be about 100 parts.

Unguentum Creasoti. *Ointment of Creasote.*

Take of	Creasote, *six parts*	6
	Lard, *ninety-four parts*	94

Mix them thoroughly.

¶ Present strength: 1 part of creasote to 16 parts of lard.

***Ung entum Diachylon.** *Diachylon Ointment.*

Take of	Lead Plaster, *sixty parts*	60
	Olive Oil, *thirty-nine parts*	39
	Oil of Lavender, *one part*	1

Melt the Lead Plaster over a water-bath, then add the Olive Oil. Continue the heat for a short time, then remove the vessel from the water-bath, stir until it begins to cool, add the Oil of Lavender, and continue stirring until the mixture is cold.

¶ This makes a very handsome homogeneous ointment. Cotton-seed oil may be used to advantage in place of olive oil.

Unguentum Gallæ. *Ointment of Nutgall.*

Take of	Nutgall, in very fine powder, *ten parts*	10
	Glycerin, *twenty parts*	20
	Lard, *seventy parts*	70

Rub the Nutgall with the Glycerin and afterwards with the Lard, gradually added, until they are thoroughly mixed.

¶ Present strength: 1 to 7. Raised to 10%. The addition of glycerin is advocated by Dr. Hoffmann.

Unguentum Hydrargyri. *Mercurial Ointment.*

Take of	Mercury, *fifty parts*	50
	Lard, *twenty-five parts*	25
	Suet, *twenty-five parts*	25
	Ether, *two parts*	2

Mix the Lard with the Ether as rapidly as possible, and triturate the mixture with the Mercury, until globules of the latter cease to be visible under a magnifying power of ten diameters. Then add the Suet, previously melted with a gentle heat, and partly cooled again, and incorporate it thoroughly.

¶ The extinguishment of the mercury by ether (or chloroform) in presence of lard is probably preferable to all other methods. The degree of comminution of the mercury should be defined, and a magnifying power of ten diameters is perhaps not too severe a test.

Unguentum Hydrargyri Ammoniati. *Ointment of Ammoniated Mercury.*

Take of	Ammoniated Mercury, in very fine powder, *ten parts*	10
	Simple Ointment, *ninety parts*	90

Rub the Ammoniated Mercury with the Simple Ointment, gradually added, until they are thoroughly mixed.

¶ The present strength is 1 to 12 (1 in 13). A strength of 10% is believed to be preferable.—See also under *Unguentum Paraffini.*

Unguentum Hydrargyri Iodidi Rubri. *Ointment of Red Iodide of Mercury.*

Take of	Red Iodide of Mercury, *three parts*	3
	Simple Ointment, *ninety-seven parts*	97

Rub the Iodide of Mercury with the Simple Ointment, gradually added, **until they** are thoroughly mixed.

¶ The present strength is 1 to 30.—See also *Unguentum Paraffini.*

Unguentum Hydrargyri Nitratis (*a*). *Ointment of Nitrate of Mercury.*

Take of	Lard, *seventy-six parts*	76
	Mercury, *seven parts*	7
	Nitric Acid, *seventeen parts*	17

Melt the Lard, in a glass or porcelain vessel, at a temperrture of **about 70°** C. (=158° F.); add, without stirring, Nitric Acid, *seven parts* . 7 **and continue** the heat as long as a moderate effervescence continues. **Then allow** the mixture to cool.

Dissolve the Mercury in Nitric Acid, *ten parts* . . . . . 10 **with the** aid of a sufficient heat to prevent the solution from crystallizing. Add this solution to the Lard treated with Nitric Acid, as soon as it begins to thicken.

¶ The proportions of the present U. S. Ph. are the following:

			Percentage	
Lard	16½	33	76.7	76
Mercury	1½	3	7	7
Nitric Acid	3½	7	16.3	17
				100

The 16.3 parts of nitric acid are not too much, and it would be unwise to reduce the quantity to 16 parts. It is much preferable to reduce the lard from 76.7 to 76, and to raise the nitric acid to 17 parts.

The formula given above is that proposed by R. Rother (*Pharm. Gaz.*, 3, 49). From the large number of other modifications which have been from time to time proposed, the following two are yet selected, as yielding a satisfactory product.

Unguentum Hydrargyri Nitratis (*b*). *Ointment of Nitrate of Mercury.*

Take of	Lard, *fifty-seven parts*	57
	Neat's-foot Oil, *eighteen parts*	18
	Red Oxide of Mercury, *eight parts*	8
	Nitric Acid, *seventeen parts*	17

Dissolve the Red Oxide of Mercury in the Nitric Acid. Heat the Lard and Oil together, in a porcelain basin of about 16 times the intended bulk of the product, to 82° C. (=180° F.); then remove the vessel from the heat, and add the solution of Nitrate of Mercury with constant stirring, using a glass or porcelain spatula, in such quantities at a time that the temperature of the mixture will not rise over 104° C. (=220° F.). When effervescence has ceased,

and the ointment has cooled to 82° C. (=180° F.), strain through a thin muslin strainer. Then stir the ointment occasionally until it is cold.

¶ This is the process recommended by Mr. J. U. Lloyd. His proportions were calculated into percentages, thus:

			Percentage.		
Lard . . .	5,760 grs.	288	56.8		57
Neat's-foot Oil . .	1,920 "	96	18.9	changed	18
Red Oxide of Mercury .	780 "	39	7.7	to	8
Nitric Acid . .	1,680 "	84	16.5		17

Unguentum Hydrargyri Nitratis (c). *Ointment of Nitrate of Mercury.*

Take of Lard, *seventy-six parts* 76
Mercury, *seven parts* 7
Nitric Acid, *seventeen parts* 17

Dissolve the Mercury in the Acid, and heat the solution to the temperature of 75° C. (=167° F.). Melt the Lard in a porcelain or earthen-ware vessel of at least sixteen times the capacity of the intended product, to the temperature of 75° C. (=167° F.), and add to it about one-half of the solution of mercury. Stir briskly, and when effervescence has nearly ceased, add the remainder of the mercury solution in portions, waiting each time until effervescence has subsided. Finally stir the ointment occasionally while cooling.

¶ This process has been found quite satisfactory in the hands of the writer. The temperature of the lard may, without harm, be raised a little higher; but if the operator has patience, there is no necessity.—Dr. Ross states that pure, fresh, unsalted *Butter* makes a nice yellow, permanent citrine ointment. He also strongly recommends it as a base for *Ung. Hydr. Ox. Rubr.*

Unguentum Hydrargyri Oxidi Flavi. *Ointment of Yellow Oxide of Mercury.*

Take of Yellow Oxide of Mercury, in very fine powder, *ten parts* 10
Simple Ointment, *ninety parts* 90

Rub the Oxide of Mercury with the Simple Ointment, gradually added, until they are thoroughly mixed.

¶ Present strength: 1 of Oxide of Merc. and 7 of Simple Ointment. Was reduced to 10%. See also under *Unguentum Paraffini.*

Unguentum Hydrargyri Oxidi Rubri. *Ointment of Red Oxide of Mercury.*

Take of Red Oxide of Mercury, in very fine powder, *ten parts* . 10
Simple Ointment, *ninety parts* 90

℞ Rub the Oxide of Mercury with a small quantity of the Simple Ointment to perfectly smooth and homogeneous paste, then add the remainder of the Simple Ointment and mix the whole thoroughly together.

¶ The remarks at the foot of the preceding paragraph apply also here. See also above, under *Ung. Hydr. Nit.* (c).

Unguentum Iodinii. *Iodine Ointment.*

Take of	Iodine, *four parts*	4
	Iodide of Potassium, *one part*	1
	Water, *one part*	1
	Ointment of Benzoin, *ninety-four parts*	94

Rub the Iodine first with the Iodide of Potassium and the Water, and then with a small quantity of the Ointment until the mixture is perfectly homogeneous. Then add the remainder of the Ointment and mix the whole thoroughly together.

¶ The present proportions, expressed in percentages, are: Iodine, 3.9; Iodide Pot., 0.78; Water, 1.2; Lard, 94.1%. Ointment of Benzoin is substituted for the latter.

Unguentum Iodinii Compositum. *Compound Iodine Ointment.*

Take of	Iodine, *three parts*	3
	Iodide of Potassium, *six parts*	6
	Water, *six parts*	6
	Ointment of Benzoin, *eighty-five parts*	85

Rub the Iodine first with the Iodide of Potassium and the Water, and then with a small quantity of the Ointment, until the mixture is perfectly homogeneous. Then add the remainder of the Ointment and mix the whole thoroughly together.

¶ The present proportions, expressed in percentages, are: Iodine, 2.7; Iodide Pot., 5.4; Water, 5.4; Lard, 86.5%. Ointment of Benzoin is substituted for the latter.

Unguentum Mezerei. *Ointment of Mezereon.*

Take of	Fluid Extract of Mezereon, *eighteen parts*	18
	Lard, *seventy-two parts*	72
	Yellow Wax, *ten parts*	10

Melt the Lard and Wax together with a moderate heat, add the Fluid Extract and stir the mixture constantly until the alcohol has evaporated, then continue to stir while cooling.

¶ Present strength, expressed in percentages, is: Fluid Extract of Mez., 17.9; Lard, 71.7; Wax, 10%. The proportions might be made 20:70:10.

*** Unguentum Paraffini.** *Paraffin Ointment.*

Take of	Paraffin Oil, *seventy parts*	70
	Yellow Wax, *thirty parts*	30

Add the Paraffin Oil to the Wax, previously melted on a water-bath, and having continued the heat until they are thoroughly mixed, remove the vessel and stir the mixture until cold.

¶ The utility of an ointment which would resist rancidity longer than the ordinary ointments containing animal or vegetable fats and oils, cannot be questioned. The

pharmaceutical and medical professions, both here and in Europe, have for several years freely used certain products obtained from petroleum, the manufacture of which is protected by patents, but the great usefulness of which is generally admitted. In the present condition of the ethical feelings of both professions in this country, it is pretty certain that the reception of such products into the pharmacopœia would not be tolerated. This Committee has no alternative, therefore, than to offer a substitute of known composition, which may be prepared by every pharmacist. Paraffin Oil, so termed in the above formula, is the particular kind known in commerce as Spindle-Oil, and would have to be specially defined and described in its proper alphabetical place in the U. S. Ph. When melted together with Yellow Wax, in any proportions, it forms a homogeneous ointment, the consistence of which, of course, depends on the proportion of wax. It resists rancidity for a long time, and forms an excellent base for such ointments as Ung. Hydrarg. Ammoniati, Iodidi Rubri, Oxidi Flavi, Oxidi Rubri, and many others which are liable to deteriorate rapidly. The name "Unguentum Paraffini" does not properly express the composition of the mixture, but the same may be said of other terms heretofore suggested, as Oleo-paraffinum, Unguentum paraffinatum, Unguentum paraffinosum, etc.

The *Germ. Pharm. Rep.* includes, among those remedies which have been declared by a majority of replies (specially put for this purpose throughout Germany) as demanding recognition by the Pharmacopœia, the following:

Virginia Vaseline, a clear, yellowish, fat-like mass, transparent in thin layers, completely amorphous, odorless and tasteless, and of the consistence of butter at ordinary temperatures. It begins to melt at 47° C., is completely fluid at 50° C., and congeals again at 46°–45° C., resuming its former consistence. It should not be saponifiable with alkalies. When shaken with ether, the ethereal solution should not redden blue litmus-paper moistened with water.

Unguentum Picis Liquidæ. *Tar Ointment.*

Take of	Tar, *fifty parts*	50
	Suet, *fifty parts*	50

Mix the Tar with the Suet previously melted with a moderate heat, and having strained the mixture through muslin, stir it constantly while cooling.

¶ Same strength as at present.

Unguentum Plumbi Carbonatis. *Ointment of Carbonate of Lead.*

Take of	Carbonate of Lead, in very fine powder, *ten parts* . .	10
	Simple Ointment, *ninety parts*	90

Rub the Carbonate with the Ointment, gradually added, until they are thoroughly mixed.

¶ Present strength 1 to 7. Was made 10%.

Unguentum Plumbi Iodidi. *Ointment of Iodide of Lead.*

Take of	Iodide of Lead, in very fine powder, *ten parts* . . .	10
	Simple Ointment, *ninety parts*	90

Rub the Iodide of Lead with the Simple Ointment, gradually added, until they are thoroughly mixed.

¶ The remarks made to the preceding § apply also here.

Unguentum Potassii Iodidi. *Ointment of Iodide of Potassium.*

Take of	Iodide of Potassium, *twelve parts*	12
	Hyposulphite of Sodium, *one-half part*	½
	Water, boiling hot, *six parts*	6
	Ointment of Benzoin, *eighty-two parts*	82

Dissolve the two salts in the Water, in a warm mortar, then add the Ointment of Benzoin gradually, and thoroughly mix them.

¶ To recombine the iodine which is gradually liberated in this ointment, it is better to employ the hyposulphite of sodium than caustic soda or potassa, for in presence of the latter some iodate is formed, while the hyposulphite causes the formation of iodide of sodium which is probably just as effective externally as iodide of potassium. Ointment of benzoin was substituted for lard.

Unguentum Simplex. *Simple Ointment.*

SYN. *Unguentum*, U. S. Ph. of 1870.

Take of	Lard, *eighty parts*	80
	Yellow Wax, *twenty parts*	20

Melt the Wax and add the Lard gradually, then stir the mixture constantly while cooling.

Unguentum Stramonii. *Ointment of Stramonium.*

Take of	Extract of Stramonium Seed, *ten parts*	10
	Diluted Alcohol, *six parts*	6
	Ointment of Benzoin, *eighty-four parts*	84

Rub the Extract with the Diluted Alcohol until uniformly soft, then gradually add the Lard and thoroughly mix them.

¶ The present U. S. Ph. directs "Extract of Stramonium," without specifying whether the inspissated extract of the leaves, or the hydro-alcoholic extract of the seed. The latter is much preferable. Hence the strength may be reduced from 12 to 10%. See also remarks to *Ung. Bellad.*

Unguentum Sulphuris. *Sulphur Ointment.*

Take of	Sublimed Sulphur, *thirty parts*	30
	Ointment of Benzoin, *seventy parts*	70

Rub the Sulphur with the Lard, gradually added, until they are thoroughly mixed.

¶ Present formula: Sulphur, 1; Lard, 2 parts. The addition of alkalies, which is often recommended, had better be left to the individual judgment of the prescriber.

Unguentum Sulphuris Iodidi. *Ointment of Iodide of Sulphur.*

Take of	Iodide of Sulphur, in very fine powder, *six parts*	6
	Lard, *ninety-four parts*	94

Rub the Iodide of Sulphur with the Lard, gradually added, until they are thoroughly mixed.

¶ Present strength 1 to 16.

Unguentum Tabaci. *Tobacco Ointment.*

Take of	Tobacco, in fine powder, *six parts*	6
	Water, *a sufficient quantity*	q. s.
	Lard, *a sufficient quantity*	q. s.

Moisten the Tobacco with a little Water, introduce it into a conical glass percolator, and, having pressed it firmly, pour Water upon it, until the percolate weighs *forty-eight parts* 48
Evaporate this liquid to the consistence of a soft extract, and mix it thoroughly with enough Lard, gradually added, to make the product weigh *one hundred parts* 100

¶ Present strength: 1 of tobacco to 16 of lard.

Unguentum Veratriæ. *Veratria Ointment.*

Take of	Veratria, *four parts*	4
	Ointment of Benzoin, *ninety-six parts*	96
	Alcohol ("Stronger Alcohol"), *a sufficient quantity*	q. s.

Rub the Veratria with a *small quantity* of Alcohol, in a warm mortar, until dissolved; then gradually add the Lard and mix thoroughly.

¶ Same strength as at present.

Unguentum Zinci Oxidi. *Ointment of Oxide of Zinc.*

Take of	Oxide of Zinc, *twenty parts*	20
	Ointment of Benzoin, *eighty parts*	80

Rub the Oxide of Zinc in a warm mortar with about an equal weight of the Ointment, until the mixture is perfectly homogeneous; then add the remainder of the Ointment, and mix the whole thoroughly together.

* **Urtica** (*U. dioica* L., and *U. urens* L.).—**Uva Passa.**—**Uva Ursi.**—**Valeriana.**—**Vanilla.**—**Veratria.**—**Veratrum Album.**—**Veratrum Viride.**—* **Viburnum Prunifolium** (?).

Vinum Aloes. *Wine of Aloes.*

Take of	Socotrine Aloes, in fine powder, *six parts*	6
	Cardamom, in moderately fine powder, *one part*	1
	Ginger, in moderately fine powder, *one part*	1
	Sherry Wine, *a sufficient quantity*	q. s.

Macerate the powders, for seven days, with
Sherry Wine, *ninety parts* 90

with occasional agitation. Then filter through paper, and wash the contents of the filter with enough Sherry Wine, to make the product weigh *one hundred parts* 100

¶ The difference from the present formula is very slight.

Vinum Antimonii. *Wine of Antimony.*

Take of Tartrate of Antimony and Potassium, *one part* . . . 1
Boiling Distilled Water, *fifteen parts* 15
Sherry Wine, *a sufficient quantity* . . . . . q. s.

Dissolve the Tartrate of Antimony and Potassium in the Distilled Water, and, while the solution is hot, add
Sherry Wine, *two hundred parts* 200
Then filter, and pass *enough* Sherry Wine through the filter to make the product weigh *two hundred and fifty parts* 250

¶ The present strength is about 1 in 228. That of the Br. Ph. is 1 in 240; that of the Germ. Ph. 1 in 250; that of the Fr. Ph. 1 in 300.

	Present Form.	Exact Weight.	Approximations.	
Tart. Antim. and Pot.	32 grs.	32 grs.	1	1
Dist. Water	1 fl. ʒ	455.7 "	14.5	15
Sherry Wine (sp. gr. 990)	15 fl. ʒ	6,766 "	212	212

*** Vinum Aromaticum.** *Aromatic Wine.*

Take of Wormwood, in coarse powder, *one part* 1
Peppermint, in coarse powder, *one part* 1
Thyme, in coarse powder, *one part* 1
Sage, in coarse powder, *one part* 1
Rosemary, in coarse powder, *one part* 1
Lavender, in coarse powder, *one part* 1
Origanum, in coarse powder, *one part* 1
Port Wine, *a sufficient quantity* . . . . . q. s.

Macerate the powders with Port Wine, *one hundred parts* . . . 100
for seven days, and express strongly; filter the expressed liquid, and pass enough Port Wine, first through the dregs and then through the filter, to make the product weigh *one hundred parts* 100

¶ The formula as usually given, and as furnished to the Committee, produces a product weighing 120 parts. It was thought to be an improvement to make it one-fifth stronger. It is used externally, and the strength of 1 in 100 is better remembered.

Vinum Colchici Radicis. *Wine of Colchicum Root.*

Take of Fluid Extract of Colchicum Root, *two parts* . . . 2
Sherry Wine, *a sufficient quantity* . . . . . q. s.

Mix the Fluid Extract with Sherry Wine, *three parts* . . . 3

and filter through paper. Then wash the filter with enough Sherry Wine to make the product weigh *five parts* 5

¶ The present U. S. Ph. directs the Vin. Colch. Rad. to be made by percolating the powdered tuber with Sherry Wine. This is, however, a poor menstruum of the active principles, so far as *extracting* the latter is concerned. Hence it is preferable to use the fluid extract.

Present Formula.		Approximation.
Colchicum Root . . 6 ℥	2,880 grs.	20 1 2
Sherry Wine (sp. gr. 0.990) to 16 fl. ℥	ab. 7,300 "	73 2.5 5

Vinum Colchici Seminis. *Wine of Colchicum Seed.*

Take of Fluid Extract of Colchicum Seed, *two parts* 2
Sherry Wine, *a sufficient quantity* . . . . . q. s.

Mix the Fluid Extract with Sherry Wine, *thirteen parts* . . 13
and filter through paper. Then wash the filter with enough Sherry Wine to make the product weigh *fifteen parts* 15

¶ The Fluid Extr. of Colch. Seed was substituted for the seeds themselves, for the same reason as given in the preceding note.

Present Formula.		Approximation.
Colchicum Seed . . 2 ℥	960 grs.	96 2
Sherry Wine (sp. gr. 0.990) to 16 fl. ℥	ab. 7,300 "	730 15 nearly.

Vinum Ergotæ. *Wine of Ergot.*

Take of Fluid Extract of Ergot, *one part* 1
Sherry Wine, *a sufficient quantity* . . . . . q. s.

Mix the Fluid Extract with Sherry Wine, *seven parts* . . . 7
and filter through paper. Wash the filter with enough Sherry Wine to make the product weigh *eight parts* 8

¶ Very nearly of the same strength as at present.

*** Vinum Ferri Amarum.** *Bitter Wine of Iron.*

Take of Citrate of Iron and Quinia, *one part* 1
Distilled Water, *two parts* 2
Tincture of Orange Peel, *four parts* 4
Sugar, *eight parts* 8
Sherry Wine, *twenty-one parts* 21

Dissolve the Citrate of Iron and Quinia in the Distilled Water, and add the solution to the Sherry Wine previously mixed with the Tincture of Orange Peel. Finally add the Sugar and dissolve by agitation, without heat.

¶ Glycerin may be used instead of sugar.

*** Vinum Ferri Citratis.** *Wine of Citrate of Iro*

Take of Citrate of Iron and Ammonium, *one part* 1
Distilled Water, *one part* 1
Sherry Wine, *twenty-eight parts* 28

Dissolve the Citrate of Iron and Ammonium in the Distilled Water, and add the Sherry Wine.

¶ This preparation is much in demand, and should be introduced.

Vinum Ipecacuanhæ. *Wine of Ipecacuanha.*

Take of Fluid Extract of Ipecacuanha, *one part* 1
Sherry Wine, *a sufficient quantity* . . . . . q. s.

Mix the Fluid Extract with
Sherry Wine, *fifteen parts* 15
and filter through paper. Wash the filter with enough Sherry Wine to make the product weigh *sixteen parts* 16

¶ Very nearly of the same strength as at present. The U. S. Ph. directs 1 fl. ʒ of Fl. Ext. and 15 fl. ʒ of Sherry.

Vinum Opii (*a*). *Wine of Opium.*

Take of Opium, dried, and in moderately fine powder, *sixteen parts* 16
Cinnamon, in moderately fine powder, *one part* . . 1
Cloves, in moderately fine powder, *one part* . . . 1
Sherry Wine, *a sufficient quantity* . . . . . q. s.

Mix the powders with
Sherry Wine, *one hundred and ten parts* 110
and macerate for seven days, with occasional agitation; then transfer the mixture to a conical percolator, and when the liquid has passed the surface, gradually pour on Sherry Wine, until the whole percolate weighs *one hundred and twenty-eight parts* 128

N. B.—Wine of Opium made by the formula of the present U. S. Ph. has a spec. gr. of about 1.014; or 1 fl. ʒ weighs about 462 grains.

Present Formula.		Exact Weight.		Approximations.		
Opium	2 ʒ	960 grs.	96	16	16	or 1 grain of Opium in 8 grains.
Cinnamon	60 gr.	60 "	6	1	1	
Cloves	60 "	60 "	6	1	1	
Sherry Wine (sp. gr. 0.990.)	to 16 fl. ʒ	7,392 "	739	123	128	

Vinum Opii (*b*). *Wine of Opium.*

Take of Opium, dried, and in moderately fine powder, *ten parts* . 10
Cinnamon, in moderately fine powder, *one part* . . 1
Cloves, in moderately fine powder, *one part* . . . 1
Sherry Wine, *a sufficient quantity* . . . . . q. s.

Mix the powders with
Sherry Wine, *ninety parts* 90
and macerate for seven days, with occasional agitation. Then transfer the mixture to a conical percolator, and when the liquid has passed the surface, gradually pour on more Sherry Wine, until the whole product weighs *one hundred parts* 100

In accordance with the recommendation given under *Acetum Opii* on page 8, it is proposed to change the strength of this preparation to 1 in 10.

This relation may be introduced into many other preparations, without doing great violence to their therapeutic effect. It would greatly facilitate calculations in prescribing medicines, and would assist the memory in retaining the formulæ.

Vinum Portense.

Vinum Rhei. *Wine of Rhubarb.*

Take of	Rhubarb, in moderately coarse powder, *sixteen parts* .	16
	Canella, in moderately fine powder, *one part* . . .	1
	Sherry Wine, *seventy-five parts*	75
	Diluted Alcohol, *a sufficient quantity*	q. s.

Mix the Sherry Wine with Diluted Alcohol, *fifteen parts* . . 15
and moisten the powders, previously mixed together, with a sufficient quantity of the mixture; then transfer them to a conical percolator, and gradually pour upon them the remainder of the mixture, and afterwards *more* Diluted Alcohol, until the product weighs *one hundred and twenty-eight parts* 128

¶ The strength of the French preparation is 3 in 50; of the British, about 1 in 14; of the German, about 1 in 14; of the present U. S. Ph., about 1 in 7. The above proportions make it 1 in 8. A further improvement would be to make it 1 in 10.

Vinum Tabaci. *Wine of Tobacco.*

Take of	Tobacco, in moderately fine powder, *one part* . . .	1
	Sherry Wine, *a sufficient quantity*	q. s.

Macerate the Tobacco with Sherry Wine, *fourteen parts* . . . 14
for seven days, with occasional agitation; then express, filter through paper, and wash the dregs and filter with enough Sherry Wine to make the product weigh *fifteen parts* 15

¶ Same strength as at present.

***Vinum Tokayense (?).—Vinum Xericum.—Viola.—*Violar Tricolor.—Xanthorrhiza (d).—Xanthoxyli Cortex.**

¶ The present officinal title "Xanthoxylum" is to be altered into "Xanthoxyli Cortex," if the berries are likewise made officinal. They form a constituent in *Syrupus Stillingiæ Co.*

***Xanthoxyli Bacca.—Zinci Acetas.—*Zinci Bromidum.—Zinci Carbonas**

Præcipitata.—Zinci Chloridum.—* Zinci Iodidum (?).—* Zinci Nitras Fusa.—Zinci Oxidum.

¶ Oxide of Zinc can be produced free from chlorine or sulphuric acid only if prepared in the wet way, and in small quantities.—*Germ. Pharm. Rep.*

Zinci Oxidum Venale. *Commercial Oxide of Zinc.*

¶ According to Schering, commercial oxide of zinc is never free from lead. Therefore, if a solution of oxide of zinc is supersaturated with ammonia, and sulphuretted hydrogen carefully added, the lower layer of the metallic sulphide thereby produced is brownish or brown, if the oxide was the usual commercial article, or mixed with it. —*Germ. Pharm. Rep.*

*** Zinci Phosphidum.—Zinci Sulphas.**

*** Zinci Sulphocarbolas.** *Sulphocarbolate of Zinc.*

¶ The salt is odorless, soluble in 2 parts of water, or 5 parts of alcohol of spec. gr. 0.830 at 17° C. The solution has an acid reaction. To test the salt, dissolve a sample in 40 parts of alcohol, decompose it with sulphuretted hydrogen, and test the filtrate for calcium, barium, and magnesium. If free sulphuric acid is present, a strip of filtering paper saturated with a solution of the salt and dried on the water-bath would be colored black (*Flückiger*).—*Germ. Pharm. Rep.*

Zinci Valerianas. *Valerianate of Zinc.*

¶ Commmercial valerianate of zinc occurs both as anhydrous and as hydrated salt, which do not differ much in appearance. It is, therefore, necessary to fix the percentage of water, unless it is preferred to demand a salt dried at 100° C. Hydrated valerianate of zinc yields on gentle ignition 26.7%, and the anhydrous salt 30.3% of oxide of zinc. The salt is completely soluble in absolute alcohol, and the solution, after being decomposed with sulphuretted hydrogen, yields a filtrate which should leave no residue on evaporation (*Flückiger*).—*Germ. Pharm. Rep.*

Zincum.—Zingiber.

ERRATA AND ADDENDA.

Page.

7. Line 2 fr. below, read: *four hundred and twenty-one parts* (421), instead of: *forty-six parts* (46).

11. Substitute the following, in place of the formula there given.

Acidum Sulphuricum Aromaticum. *Aromatic Sulphuric Acid.*

Take of	Sulphuric Acid, *one hundred and fifty parts*	150
	Tincture of Ginger, *forty-five parts*	45
	Oil of Cassia, *one part*	1
	Alcohol ("Stronger Alcohol"), *a sufficient quantity*	q. s.

Add the Sulphuric Acid gradually to Alcohol, *seven hundred parts* . . . . . 700 and allow the mixture to cool. Then add to it the Tincture of Ginger and the Oil of Cassia, and afterwards *a sufficient quantity* of Alcohol, to make the product weigh *one thousand parts* 1000

¶ The formula given on page 11 produces an unsatisfactory product, as it invariably deposits a sediment. The above formula yields an unexceptionable product. The percentage of sulphuric acid is, as nearly as possible, the same as in the formula of the present U. S. Pharm., namely 19%.

19. To **Aluminii Sulphas** add:

¶ If the process for preparing this salt should be retained in the Pharmacopœia, it would have to be modified in accordance with the improvements proposed by Mr. J. U. Lloyd (see *New Rem.*, 1879, 237).

26. Add: * **Chelidonium** (?).

32. Under **Collodium**, the directions should read as follows:

Introduce the Gun-Cotton, well-picked, into a tared flask containing the Alcohol, and allow it to stand for 15 minutes, occasionally shaking. Then weigh into it the Ether, and agitate until the Gun-Cotton is dissolved.

47. Add: * **Extractum Glycyrrhizæ Purificatum.**

49. Line 2 fr. below: read *Procter*, instead of *Proctor*.

64. **Gelatina.** If it were not for long custom, it would be better if this word had the termination *-um*.

64 and 65. Under **Glyceritum Acidi Carbolici, G. A. Gallici, G. A. Tannici** and **G. Sodii Boratis**, the quantity of glycerin should be *four parts* (4), instead of *five* (5).

77. Line 9 fr. top: dele: accordingly.

79. Line 20, read: with Acetic Acid, instead of: Acetic Acid.

87. Under **Liquor Guttaperchæ** read: Commercial Chloroform, instead of: Chloroform.

87. Under **Liquor Hydrargyri Nitratis**, first formula, read: Nitric Acid. *sixty-seven parts* (67), instead of *ninety-one parts* (91).

96. Under **Mistura Cretæ**, read each time: *thirty parts* (30), instead of: *three hundred parts* (300).

Another formula for **Mistura Cretæ** may be constructed as follows:

Take of	Compound Powder of Chalk, *two parts*	2
	Cinnamon Water, *fifteen parts*	15
	Water, *fifteen parts*	15

Rub the Compound Powder of Chalk (*see below*) with the Cinnamon Water and Water gradually added, and mix them thoroughly together.

96. Under **Mistura Glycyrrhizæ Co.**, dele in "fine powder," after Purified Extract of Liquorice.

105. Add: * **Persio** (*Cudbear;* see *Tinctura Persionis*).

114. Add: * **Pulvis Cretæ Compositus.** *Compound Powder of Chalk.*

Take of	Precipitated Carbonate of Calcium, *two parts*	2
	Gum Arabic, in fine powder, *one part*	1
	Sugar, in fine powder, *one part*	1

Rub them together until they are thoroughly mixed.

¶ This is recommended as a convenient basis for making *Mistura Cretæ*. Precipitated Carbonate of Calcium, substituted for common chalk, makes a nicer mixture, not liable to be lumpy.

135. Under **Syrupus Ferri Bromidi** read: "Simple Syrup" for: Syrup. The same correction is to be made in a few other syrups.

143. Line 23, read: "Red Saunders or," instead of: "Santal of."

147. Under **Syrupus Rubi Idæi** read in each case: *Rasp*berry for Strawberry.

159. **Tinctura Cannabis** (*a* and *b*) should read: **Tinctura Cannabis Indicæ.**

175. Line 8 fr. top. Read: thoroughly, for: thorough.

* The asterisk should be prefixed to: * **Oleum Thymi**, * **Syr. Ferri Lactophosphatis**, * **Syr. Ferri Quiniæ et Strychniæ Phosphatum**, * **Syrupus Phosphatum Co.** (*b*).